USING STUDENT PEER FACILITATORS FOR ASYNCHRONOUS ONLINE DISCUSSION TO EXTEND PROFESSIONAL DEVELOPMENT AMONGST UNDERGRADUATE MEDICAL STUDENTS

MARIA ANGELA REGAN

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Abstract

Professional development is an essential part of undergraduate medical training. Since the GMC's (2003) document 'Tomorrows Doctors' underlined the need to provide support for medical students to monitor their progress as independent learners, reflective practice has become a significant aspect of medical student's education and professional training. One method of supporting reflective practice amongst such students is the use of online discussion forums. However, the use of students as peer facilitators for online discussions in a medical education context is not well researched.

Using such a student-centred approach, this two year multi-case study examined the use of Student Peer Facilitators for online group reflective discussion amongst third year medical students. A range of data collection methods was employed throughout the two years of the study. In the first year volunteer medical students were trained as Facilitators using generic group facilitation techniques (*n*=76). In the second year e-moderating strategies were incorporated into the training and preparation of Facilitators (*n*=79). To obtain medical students' perceptions of this approach, quantitative and qualitative data was gathered through questionnaires, in-depth interviews and focus groups. Data was coded and organised according to the study's research aims with interpretation of findings arranged by analytical themes, emerging theories and the study's conceptual framework. The text output from sample online discussions (*n*=40) from both years of the study were also selected to explore the influence the Facilitators on the interaction amongst the sample groups. Primary methods included analyses of Cognitive, Social and Tutor presence levels in the online discussions as defined by the Community of Inquiry model devised by Garrison and Anderson (2000).

Findings from the study suggest that as a pedagogical strategy, Student Peer Facilitators can assist in the development of reflective practice in online group discussion; the sharing of good practice; and creating a context to foster group collaboration and communities of inquiry. Introducing practical

experience of e-moderating skills into the training of Facilitators showed marked enhancements in the online discourse within the three elements of the Community of Inquiry model. This was particularly visible within the Cognitive Presence levels analysed. By modelling these vital skills, it was possible for Facilitators to encourage other group members to emulate good practice in the online discussions. Other positive aspects of the amended training showed an increase in contributions from male participants to the discussions.

Although students in this study noted several benefits in introducing the Student Peer Facilitators, various challenges were also observed including a perceived lack of ‘presence’ by Tutors; the social dynamics and learning culture peculiar to medical students, and building and sustaining an online learning community in a widely dispersed educational context. In this respect findings demonstrated the importance of embedding appropriate training and preparation into the introduction and delivery of Student Peer Facilitators to enhance the development of reflective discourse amongst online groups of learners.

Statement by Author

This dissertation has been submitted in partial fulfilment of requirements for a degree in Doctor of Education at the Manchester Metropolitan University.

Signed:

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Definition and Terms

Asynchronous Discussion	Text based computer mediated communication that takes place outside of real time
Cognitive Presence	'Analysis, construction, and confirmation of meaning and understanding within a community of learners through sustained discourse and reflection' (Garrison and Anderson, 2003:55)
Collaboration	Two or more people interacting
Community of online learners	Shared interests and goals among a group of individuals in an online, web-based environment
Community of Inquiry	'Teachers and students transacting with the specific purposes of facilitating, constructing, and validating understanding, and of developing capabilities that will lead to further learning' (Garrison and Anderson, 2003:23)
CPD	Continuing Professional Development is a structured approach to learning to help ensure competence to practice
Clinical Tutor	A title used at the time of this study for a qualified clinician with teaching responsibilities for third year medical students at Manchester Medical School
Discussion	A series of entries made by students in the same group, from start to finish
E-moderator	A Facilitator of discussions in an online electronic environment
GMC	General Medical Council - the governing body of Medical Schools in the UK

Higher Education	Universities, colleges other non-profit forms of education for adults
Medical School	Tertiary educational institution that teaches students medical practice
MMS	Manchester Medical School, at the University of Manchester. Educational setting for student participants
MBChB	Bachelor of Medicine, Bachelor of Surgery - a five year undergraduate degree programme to study medicine
Online Learning	Learning using Internet technology also referred to as e-learning, web-based or distance learning
PAL	Peer Assisted Learning
Participant	A third year undergraduate student on the MBChB medical programme at the University of Manchester
PBL	Problem based learning a method of collaborative group, independent learning
Reflection	'Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends' (Dewey, 1933:9)
Social Presence	'The ability of participants in a community of inquiry to project themselves socially and emotionally as 'real' people (i.e., their full personality) through the medium of communication being used' (Garrison et al. 2000:89)

SaP	Students as Partners, a work programme across the University of Manchester involving peer assisted learning
Student Contribution	Posting a message, asking questions, answering questions, making comments or suggestions
Student Peer Facilitator (SPF)	A third year undergraduate medical student at the University of Manchester trained to facilitate online discussions
Synchronous Discussion	Text based computer mediated communication that is instant and in real time
Teaching Hospital	A University linked teaching hospital medical students are allocated to and attend for studies of clinical sciences on the MBChB programme
Teaching Presence	'The design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes' (Anderson et al. 2001:5)
Text Contribution	A sentence or part of sentence, in the form on a complete participant's response entered by one participant at one particular time. This can vary in length from one line to 30 lines
Trigger	A message sent to the group online either by a student facilitator or another member of the group to initiate discussion
WebCT	An online learning platform used for communicating and facilitating learning and discussion within group members

Chapter 1 : General Introduction

1.1 Overview

The focus of this study was to explore undergraduate medical student's perceptions of using Student Peer Facilitators for asynchronous online discussion forums to enhance professional development in a medical education context. The research for this study was conducted in two phases: the first phase is presented as Case Study 1, and the second as Case Study 2. In this introductory chapter a discussion is presented on why the topic of this study was important, and an outline of the theoretical and personal perspectives that have influenced the research. This then leads to a brief overview of the background, methodological approaches and limitations of the study, which are expanded upon in later chapters. Finally a synopsis is provided of how each chapter within the thesis is presented.

1.2 Personal and Theoretical Perspectives

The foundations that underpin this study stem from a combination of my professional background and personal life experiences. Since obtaining a Certificate of Education over twenty years ago, I have had a strong interest in adult learning. My subject specialism is Information and Communication Technology (ICT) with a scholastic interest in reflective practice. After leaving Sixth-form College with a Business Studies Diploma, I worked in industry for five years. However, this environment and culture never quite seemed to suit my personality or abilities, and I yearned for a 'classroom' environment. Whilst working I studied at night school to obtain teaching qualifications and taught post-16 learners at various educational institutions in the North West while my children were young. Having enjoyed the experience of teaching, I sought a full-time teaching post but in order to do so I needed a degree. So at the age of 33, I became a full-time undergraduate student, whilst continuing to teach adults in the evenings. After obtaining a First Class BA (Hons) degree in Information and Communication Technologies, I developed

a thirst for studying and conducting research. I was very fortunate to be awarded the Jean Rich Scholarship through the Department of Information and Communications at the Manchester Metropolitan University which enabled me to continue my studies at postgraduate level and gain an MSc in Information Management. At the same time as studying for the MSc degree, I obtained employment as a Research Associate in Information Technology at The University of Manchester within the Manchester Medical School (MMS). Although my experience of research at this point was limited to an undergraduate dissertation, it was during this period that I developed an inclination towards using interpretive methodologies which were influenced by a mixture of educational training and personal life experiences. Despite these experiences however, I strived to consider different theoretical approaches objectively.

After three years as a Researcher, I moved to a post as Educational Technologist within MMS, where my previous experience of teaching was combined with the educational practice of using information technology. Although this seemed like a perfect combination, I never truly felt comfortable with this role. The profession of an Educational or Learning Technologist is a relatively new and sometimes fluid one. Technologists generally have different perspectives and interests than those of web or technical developers, and typically their interests lie with user support. Still they are often viewed as 'techies' albeit their skills and experience are not always of a technical nature. I was grateful therefore, when three years later the opportunity arose for me to move into a Lecturer's post delivering reflective learning and communication skills teaching for undergraduate medical students. This I felt, married far better with my previous experience and inherent qualities, and it was during this transition period that I aspired to enhance my scholarship further and registered for a Doctorate in Education at the Manchester Metropolitan University.

Adjacent to my training as a Doctoral research student, was the relationship between my professional practices as a Lecturer within MMS. During my studies, I increased my awareness of the realities of conducting research and

endeavoured to improve my pedagogical practice and my own reflective capabilities. Indeed, much of the theoretical framework supporting this research is peppered by influences from my role as a non-clinical, medical educationalist within a Higher Educational institution. Throughout earlier work on the Doctorate in Education programme I have probed into the complexities associated with professional reflective portfolios and discussed the dilemmas of using online environments for such activities (Assignment 1). Preliminary ground work included a pilot study examining the use of online learning platforms for portfolio activities with medical students (Assignment 3 and 4). Collectively the research literature, previous assignments and my professional practice have fuelled my interest to explore the area of reflective learning in online environments further. Furthermore, as Laurillard (2002:24) suggests it is important that academics should become 'reflective practitioners in the pedagogy of their subject by undertaking research into their own teaching practice'.

1.3 Background and Rationale for the Study

A fundamental thread throughout this thesis is reflection. Reflective practice is recommended as an important skill for medical students to engage in as they develop into a 'medical professional'. However, it is recognised that understanding and maintaining reflective practice for professional development is not always instinctive for many students at the beginning of their medical training (Driessen et al. 2007; Buckley et al. 2009; Chambers et al. 2011). Research often overlooks the fact that for many students, particularly at the beginning of their studies, reflective skills may not be inherent, and for some can thus be challenging (Wald et al. 2012). It is not just reflection that some students may find difficult however; it can also be the transition from pedagogy to andragogy principles of learning as alluded to earlier. On entering medical school students are encouraged to develop self-awareness and insight in order to evaluate their knowledge and skills, develop a basis for making sound professional and ethical judgments, and take responsibility for addressing learning issues. However, prior to medical

school many medical students are subject to a carefully directed, modular type of learning and may not always be ‘mature’ enough in their learning to appreciate the significance of reflection. In this respect a variety of personal and professional development (PPD) activities are encouraged to enhance reflective practice amongst medical students. Such activities are considered useful in providing a basis for documenting personal experiences and beliefs in both written form and group discussion (Howe et al. 2009).

One method increasingly used for delivering PPD for learning opportunities outside conventional classroom environments is online discussion forums. Investigations into their use in educational contexts is however, somewhat contentious. Several reasons are portrayed in the literature for their widespread use. The greatest advantage highlighted is that learners can participate in discussion at a time and pace to suit them (Murphy 2004; Hew and Cheung, 2008). Others are their potential to support higher levels of thinking, self-directed learning and meta-cognition, where learning outcomes are achieved through enhancing reflection (Hew and Knapczyk, 2007; Balaji and Chakrabarti, 2010). However, low levels of participation, superficial levels of discussion, poor online practice (e.g. netiquette and online courtesy), and the linear nature of online discussions have been identified as some of the challenges faced (Mazzolini and Maddison, 2007; Rovai, 2007). As a result increasing emphasis is placed within educational spheres on the importance of understanding such learning opportunities, and many studies have focused their attention on student-centred practices to overcome these hurdles (Dennen, 2005; Hew and Cheung, 2008; Cheung and Hew, 2011).

Not unexpectedly student-centred approaches such as peer facilitation have been recognised as one method of enhancing online learning through engagement with peers (Scagnoli, 2005; Rovai, 2007). However, despite a number of studies supporting the role of a facilitator and demonstrating that without guidance students engage less in online discussion (Oliver and Shaw, 2003; Pawan et al. 2003; Guldberg and Pilkington, 2007), few studies have reported on reciprocal peer facilitated discussions in a medical education context. In addition, whilst a number of conceptual frameworks

have been developed to analyse online group interaction during the last ten years, much analysis has been undertaken by means of usage statistics and frequencies, with little emphasis on the cognitive development of interactions that take place in online discussions (Vlachopoulos and Cowan, 2010).

At the time of this study, juxtaposed to the perceived gaps in the literature, was my remit as a Lecturer at MMS, where I was part of a small team responsible for the delivery of reflective portfolio sessions to medical students in the first two years of their studies. At MMS portfolio delivery in this stage of the medical curriculum was achieved through small group sessions facilitated by a Tutor and maintaining a paper-based portfolio of evidence. In order to enhance and extend the professional development of students in Year Three of the curriculum, when they become clinically attached to Teaching Hospitals and community placements, an innovative scheme of providing students with the prospect of engaging in online discussions with their peers was introduced. A novel aspect of these discussions was that the role of the Student Peer Facilitator was performed by students based within the same year group of the medical programme (Braidman et al. 2008). In line with constructivist principles, discussion topics set for students were centred on real-life authentic clinical situations to enhance student's practice of reflection. Further details of the implementation of the Student Peer Facilitation scheme is provided in Section 1.5.1.

In the following section the context and environment of this study is described. The learning culture of the student participants in this study is an important part of the research.

1.4 Educational Context and Setting of the Study

For many medical schools within the UK the undergraduate medical programme is the first phase of medical education. It provides the basis for future learning and practice in a clinical or academic career. Normally this takes five years of full-time study, but for some students the programme can take up to six. Usually these are students who enter a course at the Foundation year stage or join a programme in later clinical training years. After completion of the undergraduate course medical students usually then enter a two year Foundation Programme to undertake a vocational training phase in a variety of different specialties. Medical graduates, practicing clinicians, and medical students must all adhere to the principles of professional practice as set out by the General Medical Council (GMC, 2009), as described in detail in Chapter 2 (Section 2.4).

Traditionally medical education has been regarded as an institutionally based course with most learning occurring in a classroom environment, laboratories or teaching hospitals. However in the last decade medical education has undergone radical changes. Typically it now represents a combined multi-disciplinary approach, where medical students are integrated into the local health service and communities alongside clinical and National Health Service (NHS) staff. The rationale for this has stemmed from the GMC's recommendations that medical students should have 'real life' experiences and familiarise themselves with modern fast changing health care systems (GMC, 2003). As the delivery of undergraduate courses continued to change, the 'community' in terms of resources has developed into an important learning environment. Indeed, primary-care courses are now considered to be crucial in providing students insight into the socio-economic environment of patients, and the local resources available for their care (Wallace, 2003).

1.4.1 The Undergraduate Programme at Manchester Medical School

At MMS the undergraduate medical course is a patient centred programme, based on theory, simulated and expert patients, teaching hospitals and community, and individuals, families and populations. The context and educational setting within the MMS is significant in that it has several unique characteristics. First, the physical size and geographical dispersion of the learning environment; it is the largest medical school in the UK and one of the largest in Europe. The Faculty of Medical and Human Sciences is the same size as some smaller universities within the UK. The large number of medical students in a cohort year and the partnerships established with other educational institutions are somewhat different to other medical schools within the UK Higher Education system.

Second, in 1994 MMS was the first medical school in the UK to introduce problem-based learning (PBL) with a focus on self-learning skills and encouraging students to use a wide range of resources (O'Neill et al. 2003). This included time spent in a community setting under the guidance of a 'Community Tutor'. PBL, in comparison to didactic methods, has been found to be a more stimulating way for adults to learn and help develop and enrich multi-disciplinary perspectives (Mennin et al. 2003; Schmidt et al. 2009). Since then there have been a number of strategies that MMS have adopted. For example, complex vertical and horizontal themes and health topic strands running through the whole curriculum. These include Early Clinical Experience (ECE) providing students with opportunities to meet patients and staff in hospital and community settings; intercalated degree opportunities for studying subjects in-depth; European Options allowing opportunities for students to develop language skills and knowledge of European medicine; experiential teaching of communication skills; inter-professional learning and significantly, initiatives based on reflective practice.

The delivery of medical education within MMS is full-time over three separate phases (Phase One - Three) during the five year period of the programme. Phase One comprises of Year One and Two, Phase Two includes Year

Three and Four, and Phase Three encompasses the final year of training, Year Five. Students spend 20% of Year Three, 40% of Year Four and 75% of Year Five outside the medical school on clinical and community placements. In each academic year in Phase One of the curriculum, new cohorts of students (around 390) start the programme at the beginning of September. Predominantly students study the foundations of biological, social, behavioural and clinical sciences underpinning medicine. Shortly after starting their studies students encounter patients in community settings within the wider Greater Manchester area.

After two years and successful completion of Phase One, students then progress into Phase Two traditionally referred to as the 'clinical stage'. Students can also spend an additional year obtaining an intercalated degree between Year Two and Year Four studying elsewhere. At this point students join the programme through partnerships established with St Andrews University, and other international universities such as the International Malaysian University (IMU). Student numbers then increase to approximately 480 with up to 90 extra students joining the programme from these other universities. Figure 1 highlights how Phase Two (the learning phase of the student participants in this study) fits within the overall structure of the MBChB programme. The diagram also shows how personal and professional development (PPD) activities run throughout the whole programme as a key strand.

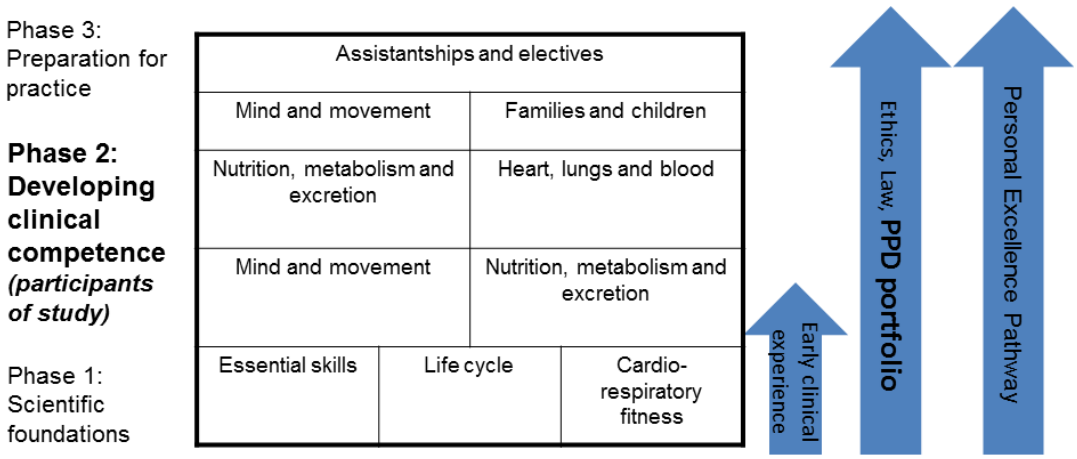

Figure 1: Overview of MBChB Undergraduate Medical Programme at MMS

As stated in Phase Two of the programme medical students spend the majority of their time in work-based, clinical environments in hospitals or community practices with ongoing clinical science teaching and an increase in clinical and independent learning. Students are educationally attached to one of four key teaching sites in these environments, commonly known as 'Teaching Hospitals' or more recently 'Health Education Zones'. Within this phase of the programme students can be geographically dispersed anywhere over a fifty mile radius from the main medical school on clinical placements linked to one of the four teaching hospitals. At this stage students are allowed to engage in supervised responsibility for patient care. Table 1 shows the different type of educational settings linked to the MMS where students in this study were clinically based. Each of these sites is coded with a corresponding letter throughout.

Educational Settings	No. linked to University
University Teaching Hospital Site Royal Preston (Hospital A) Salford Royal (Hospital B) Central Manchester University (Hospital C) University Hospital South (Hospital D)	4
District General Hospitals (Linked to Teaching Hospital Sites)	35
General Practitioners (Linked to Teaching Hospital Site and District General Hospitals)	500

Table 1: Educational Settings within Phase 2 of MBChB Linked to MMS

Within Phase 2 the learning environment of students adopts a hub and spoke arrangement with district general hospitals and community placements linked to the four teaching hospital sites. On successful completion of Phase Two students then enter Phase Three where final consolidation and integration of their learning occurs. Successful completion of the MBChB programme ultimately then leads to medical students becoming a doctor. Figure 2 illustrates the context and learning environment of students in Phase 2 of the MBChB programme.

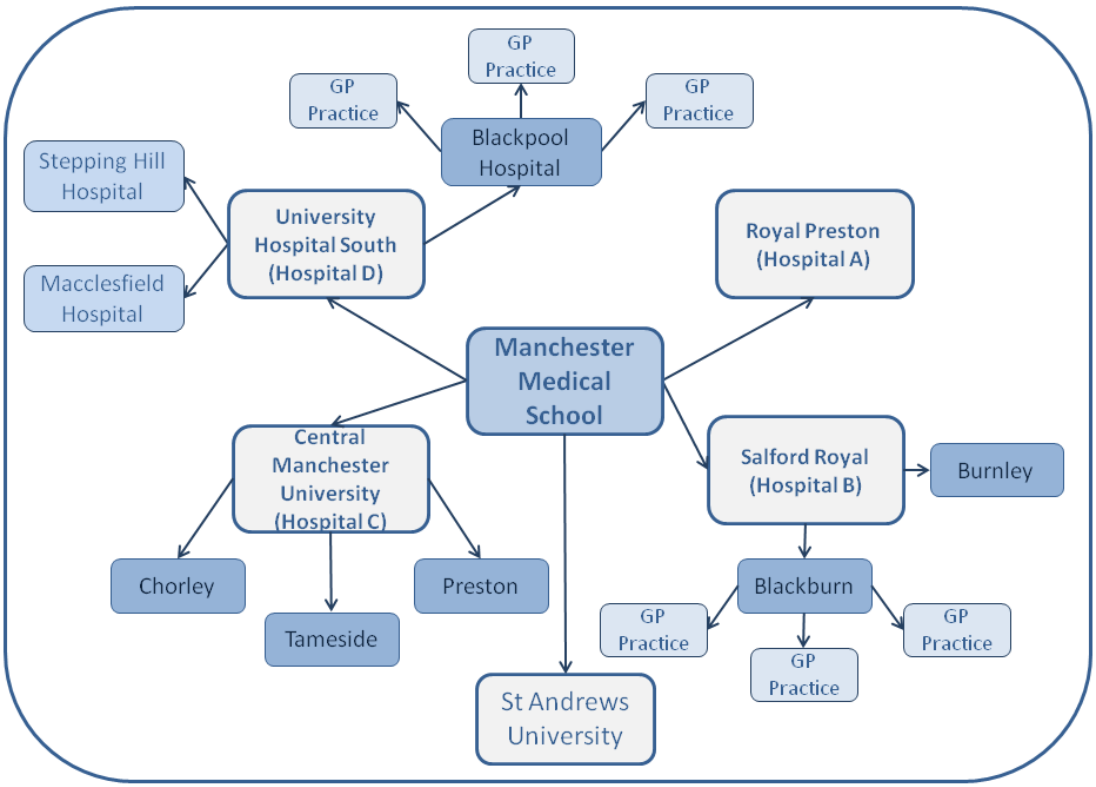

Figure 2: Learning Environment of Participants in Phase 2 at MMS

1.5 PPD Delivery on the Undergraduate Programme at Manchester

At the time of this research a system of Portfolio Tutors for face-face groups of students was used at MMS with Tutors retaining some of the functions associated with individual mentoring in Phase One. Tutors utilised skills of group facilitation to emphasise aspects of professional behaviour, reflective writing and practice and explain the significance of personal and professional development. Through this, the positive effects of students learning from one another has been further recognised and students as 'independent reflective learners' is emphasised. Constructivist theorists argue that all learning is an active process and that learning is unique to the individual learner, linked to experience wherever the learning context may be (Vygostky, 1978; Bransford et al. 2000). Such notions lend support to the stance of individuals bringing knowledge, skills and attitudes to a learning experience through different learner perspectives, and enhancing the learner centred environment (Fauske and Wade, 2004; Swan and Shi, 2005). However, in extending

students' understanding of professionalism, there is little opportunity for group face-to-face contact to discuss experiences and share reflection on their learning as the nature of clinical work place learning during Phase Two at MMS is such that the student timetabling is highly complex. A system of using students as peer facilitators was thus developed based primarily on building on theoretical perspectives put forward by social constructivists such as Laurillard (2002), and the practicalities of delivering portfolio activities in Phase 2 of the medical programme.

1.5.1 Introducing Student Peer Facilitators

To manage the geographical dispersion of students MMS, along with many other medical schools, has integrated online learning strategies ranging from web-based portals and intranets to complex amalgamated services presented by virtual learning environments. During the last decade two key drivers have played a central part in the widespread adoption of online learning across MMS. First, the GMC's milestone document, 'Tomorrow's Doctors', underlined the need for all medical students to have access to electronic learning resources and facilities (GMC, 2003; 2009). Second, the strategic document published by the University, 'Towards Manchester 2015 Strategy' (University of Manchester, 2005) which set out recommendations for enriching face-to-face teaching and learning for students through online environments. As experience of health care settings outside the medical school became crucial to the medical programme, the curriculum at MMS became increasingly supported by online learning technologies.

In 2004 at MMS a bespoke contemporary online learning environment was developed known as 'MedLea' (Medical Learning Environment) at MMS. Other educational technology platforms were used in conjunction with MedLea at the time of this research, including Blackboard (www.blackboard.com), and WebCT (www.webct.com). From the introduction of MedLea, came a shift in the delivery of traditionally paper-based teaching and learning practices. In September 2012 the innovative use of educational online technologies increased further, and MMS became

the first medical school in Europe to distribute individual iPads for enhancing the student learning experience for students in Phase Two of the medical programme.

Significantly, alongside these changes was an increased emphasis on reflection. Central to the change was the extension of reflective portfolio practices to students in the first year of entry onto the medical programme. The format and headings of the 'new' portfolio for students were deliberately designed to link with those specified by the GMC for practicing doctors undergoing NHS appraisal and revalidation, in order for students to become familiar with the accepted structure (GMC, 2003; 2009). Combined with the launch of patient contact early in the undergraduate programme for students (incorporating the GMC's requirements for learner-centredness) and early clinical experience, this was thus seen as a timely occasion to build on developments, specifically in respect to improving professional development and support for the processes underpinning the use of reflective portfolios.

1.6 The Research Aim of the Study

The aim of this research was to explore the use of Student Peer Facilitators in an online discussion environment through gaining undergraduate medical student's perceptions of such an approach for enhancing reflection and their professional development. This was addressed by conducting two case studies over a two year academic period (2007-2008). Whilst it is recognised that this research was based on what could be referred to as a local study, it is anticipated that the findings will help understanding of peer facilitation for online group discussions in a wider educational context. To date, no previous studies have concentrated on the use of reciprocal peer facilitating with large numbers of undergraduate medical students in asynchronous online discussions to enhance reflective practice. The specific research aims of this study and how the different ways the study helps to identify gaps in the existing literature are described in Chapter 2 (Section 2.11).

1.7 Limitations and Assumptions

This study set out to explore medical students' expectations and perceptions of Student Peer Facilitators in an asynchronous online discussion environment for professional development activities. It did not however attempt to explore all the issues pertaining to the wide ranging topic of online discussion in an educational context. Rather the study sought to formalise observations and interpretations by exploring student perceptions and attitudes; patterns of interactions and development amongst student groups; and the challenges associated with using peer facilitation strategies for online group collaboration.

There was however some limitations experienced in conducting this research. First, the research explored the impact of incorporating amendments into the Facilitator training, and not the influence of training and preparation per se, nor the presence of Student Peer Facilitators in the online groups. This would have involved the use of untrained students to lead groups, or groups without Facilitators, and may therefore have disadvantaged some students if they were included in groups without Facilitators.

Second, there was an implicit assumption that the information provided and views expressed by student participants involved in this research were not affected by desirability. There may have been occasions during this research when it was difficult to be impartial and my dual roles as a Doctoral student and Lecturer for participants in the study were acknowledged throughout. Combined, these may have influenced the shape and design of my research aims, methodologies and interpretation of findings. The limitations of this research are revisited in further detail in Chapter 7 (Section 7.4).

1.8 Terminology

Throughout this thesis there is some language and terms that are regularly used. The term ‘students’, ‘medical students’, ‘participants’ and ‘learners’ are used interchangeably. Reference to this ‘study’, ‘thesis’ and ‘research’ are also exchanged frequently. The phrase ‘Medical School’ is used as reference to inclusive educational settings that medical students involved in this research are exposed to. This includes associated clinical placements such as Teaching Hospital sites, district general hospitals, community health centres, general practices and other work based settings within the larger educational community. It also includes on campus University locations within the MMS at the University of Manchester. A full list of other vocabulary used throughout this thesis is illustrated under ‘Definition and Terms’ on page xv.

1.9 Structure of Thesis

The initial chapter of this thesis provides an introduction and background to the research and describes the educational context and research design of the study. A description is provided of the student online discussions that were established, centring on issues of personal and professional development. Chapter 2 presents a discussion of the research topic as set within the existing literature in the area of peer facilitation for asynchronous online discussion forums in a medical education context, and outlines why this topic was important to research. Leading on from this, Chapter 3 presents an account of the methodological approaches and procedures employed to capture and analyse the different data needed to address the research aims. The research was conducted in an iterative manner allowing an ‘open ended nature of qualitative inquiry as well as pragmatic considerations’ to occur (Patton, 1990: 62). Therefore this chapter illustrates how the methods were structured and utilised to explore student perceptions of online peer facilitation, the issues involved and the types of interaction that took place in online student groups over the two year period of this research.

Although largely consistent with qualitative research as described by Seale et al. (2004) and Silverman (2005) a triangulation of methods was adopted under the umbrella of the two case studies conducted.

Chapter 4 examines data collected and analysed throughout Case Study 1 through questionnaire, interview and focus groups methods with medical student volunteers. Chapter 5 then leads on to Case Study 2 where findings are presented from investigations into the cognitive development and interaction within sample online groups in the two years of this research. Insight into the cognitive development of the groups is gained through the use of the Community of Inquiry model of analysis (Garrison and Anderson, 2000). In Chapter 6 a synergised discussion is presented on the findings from both case studies described within Chapters 4 and 5. Finally in Chapter 7, implications of the research for broader educational practice are presented with suggested directions for future research. Together these chapters present an in-depth exploration of using students as peer facilitators for asynchronous online discussion forums in a medical education context.

1.10 Chapter Summary

This chapter has laid the foundations for this thesis and provided some background and contextual information on the research that was undertaken. In the following chapter a review of the relevant research literature is presented and a discussion of how this research aimed to identify gaps in the literature. In examining the existing research landscape, key concepts are critically discussed and the research of this study is further contextualised. Subsequent chapters expand upon how the research was undertaken, the theoretical framework that underpinned the research, and implications of the findings that emerged.

Chapter 2 : Literature Review

2.1 Overview

This chapter considers the research topic of this study as set against existing research literature. Wide ranging subjects such as 'professionalism', 'reflection', 'online learning' and 'peer assisted learning' may merit a review in their own right. For this reason I have incorporated a representation of these subjects and a discussion of their relevance to the theoretical foundation of using student peer facilitation strategies for online discussion in a medical educational setting. Appendix F illustrates the search strategy used.

Throughout this review I therefore build on perspectives from four broad categories: a) developing professionalism and reflective practice amongst medical students b) online pedagogical approaches for supporting reflective learning c) building and analysing interaction amongst online communities of learners and d) peer facilitation as a strategy to enhance online group interaction. As this study was exploratory in nature, questions raised by the literature helped steer towards a statement of the research aims of the study.

2.2 Conducting the Literature Review

Multiple information resources were used to undertake this review including books, chapters, academic journal articles, online databases and journals, and conference proceedings in English language only. The procedure for locating primary resources included searching MEDLINE, ISI Web of Knowledge, SCOPUS, PubMed, Web of Science, ASSIA, PsycINFO, and ERIC databases available through the Manchester Metropolitan University Library and John Ryland's Manchester University Library. The EndNote software referencing programme was utilised for keeping records of all located resources.

The body of this review was performed during the concept development stage of the research and throughout the taught element of the Doctorate in Education programme as understanding of the literature developed during the completion of assignments and data collection stages. A combination of key words, phrases and descriptors were identified to position the resources throughout the searches. Results from the searches were manually reviewed and critically appraised throughout the review, and annotations were made of the perceived 'gaps' in segments of the literature. These were highlighted and revisited at different points when apparent throughout the research. Nuances and interpretations drawn from the resources were recurring and iterative throughout different stages of the review. Some material, although interesting, was considered peripheral to the main issues being explored. Thus, such material was recorded but not critically reviewed, as part of the review. No specific time frame was set for inclusion of material in this review. Later in Chapter 7, these interpretations are revisited in order to relate to them to current debates and the emergent theory of this research.

2.3 Educational Models Underpinning the Study

In exploring the topic of student peer facilitation in an online discussion environment, it is first worth considering the pedagogical models that underpin such a learning-centred strategy. As the ideologies of many of the models overlap, I have therefore chosen to focus on three models that I consider to be more relevant to this study.

2.3.1 Adult Learning

The most prevailing pedagogical model to this research is that of adult learning. Although many medical students in the UK generally come direct from sixth-form entry it is important to remember, as stressed by Leinster (2009), that they are still 'adult learners'. Many adult learning principles centre on socio-constructivist approaches, or a more widely inclusive term known as 'social learning', where learners are expected to be active in building and sustaining their own knowledge (Dewey, 1933). Such

approaches strive to develop efficient ways of integrating learners in order to share experiences and best practice through the use of self-directed and co-operative methods of teaching and learning (Tambouris et al. 2012). There are many associated categories of adult learning principles linked to the acquisition of knowledge, skills and attitudes. Such theories are often associated with professional development due to the complexities involved in professional practice and the nature of multifaceted skills normally required of a professional.

Within Higher Education fields the learning model commonly applied is identified as andragogy, pioneered largely by Knowles (1990). According to Knowles (1990), andragogical models suggest that adults learn differently and are more motivated than children. This is based on a set of assumptions that encourage adults to discover more about the characteristics and processes involved in learning. Some theorists however, question whether models of education similar to that of Knowles, and industrial-age models of education, are now adequate for managing the learning needs of today's modern, lifelong learner (Prensky, 2001; Jones and Shao, 2011). Didactic methods of teaching and learning where Tutors are considered the 'oracle' of information, albeit still popular, no longer hold for many adult learning programmes. Although the previous learning experience of students in Higher Education is often associated with more traditional, teaching methods such as lectures, the proliferation of technology has led to Tutors moving away from being the main transmitters of knowledge to that of 'facilitators' of learning. Furthermore, a positive aspect noted of this transition is that through facilitating, Tutors have been found to 'listen' more to learners, pay further attention to student relationships and provide more feedback (Ruiz et al. 2006).

2.3.2 Problem Based Learning

The second educational model embedded in this research is problem based learning, or PBL as it is commonly identified. PBL is a philosophy strongly associated with adult learning principles and constructivist approaches to learning, and is the educational model adopted by student participants in this study. The general ethos of PBL is to encourage learners to develop critical reasoning, problem solving skills and be collaboratively productive within a group (Schmidt et al. 1983). In turn group learning can facilitate team working, communication skills, sharing information and self-directed and reflective learning (Wood, 2003). Collaborative learning frameworks such as PBL and facilitative learning are often pursued in medical education and other fields of professional training, such as nursing and teaching. In medical education PBL processes are characterised by learning being based around a set of clinical patient problems and providing an impetus for the acquisition of basic sciences needed to solve the problem (Albanese and Mitchell, 1993). Typically this is in a small group setting with learners working collaboratively, rather than competitively, to achieve set intended learning outcomes through discussion, and being self-directed in achieving their learning needs.

Since the introduction of PBL in the early 1960s, many medical schools across the UK, and indeed worldwide, have moved to PBL methods of education. However, critics of PBL as an educational method point out that it does not always adequately stimulate learners towards self-directed learning; too dominant or too passive Tutors can affect the process; it can be resource intensive (in terms of time and space) and there is often too much dependence on the motivation of groups (Dolmans et al. 2005). Although PBL methods cover a huge variety of approaches, some of which are thought to benefit online collaborative interaction (Harasim et al. 1995; Savin-Baden, 2007), to date the combination of PBL processes and group participation in online discussion environments within medical education is not widely explored in the literature.

2.3.3 Social Constructivist Learning

The third influential model underpinning this research is that based on a social constructivist approach to learning. Social learning theories are brought to the fore to help understand human behaviour and learning from a collaborative and communal perspective. Social constructivist theorists such as Dewey (1933) and Vygotsky (1978) were early activists in recognising the potential impact of social environments on learning. Vygotsky (1978) demonstrated how the construction of knowledge can be shaped by the social and cultural context of learners and developed through social interactions. His work suggests that learning is more of an active process when individual learners are given opportunities to create meaning, apply new concepts and importantly, reflect with others. Applications of social learning theories are now widely recognised as useful in exploring interaction amongst groups of online learners, particularly in a peer-peer context (Garrison, 2011).

Educational settings such as online discussion environments are known to sometimes bring challenges into the learning experience. For example, conventional classroom environments inherently contain a social component where learners can interact more easily on a face-face basis (Garrison, 2011). Yet in online discussions the features of face-face settings such as social cues, tone of voice, gestures and cultural characteristics are often thought to be ‘missing’ (Dozier, 2001; Stephenson, et al. 2001; Stodel et al. 2006). Although students studying medicine, like many other distant learners, can often be remote from campus based facilities, their circumstances can be quite diverse. Structured conversations between students can occur on an informal basis, typically before or after their teaching sessions or interaction with patients. Hence opportunities for communication can take place on a more social, communal and face-face basis. It may be reasonable to assume therefore that integration with face-face activities may inhibit the level of such learners’ engagement in reflective online discussions.

2.4 Professional Development within the Field of Medicine

Parallel to these educational models, a key component of this study is professional development within medicine. While definitions of professionalism in the literature vary, typically it is described as a set of behaviours which are based on clear criteria that denote standards required for acceptable practice within a professional discipline. Essentially at the heart of professional development lies an interest in lifelong learning and striving to adhere to an established code of standards. In the medical literature, some authors characterise professionalism as competence based development through the advancement of cognition and independence (Wilkinson and Wade, 2009). Others however place emphasis on judgment, intuition, predisposition and wisdom (Hilton, 2004). Traditionally professionalism in medicine encompassed a special body of complex knowledge, autonomy (learners assuming greater responsibility for, and taking charge of, their own learning) and codes of practice. However, modern professionalism in medicine now embraces a whole range of other issues including communication, ethics, respect, confidentiality, prejudices, beliefs and dealing effectively with families and colleagues (Gordon, 2003; Duff, 2004).

One of the main steers for incorporating much wider issues of professionalism within medicine stems from the General Medical Council's (GMC) need to rebuild public confidence in the medical profession. Although professionalism in medicine is a key component for the provision of high quality patient-centred care, the past decade has seen society in general become 'prickly' with media reports concerned with cases of malpractice. Two of the most reported events have been high profile instances such as the Bristol Inquiry in 2001, and the 2004 Shipman Inquiry. Both of these cases endorsed criticisms of how doctors were monitored in practice. However, based on these instances the monitoring of professional competency has now transformed, and as a result of the increased importance placed on monitoring; accountability and liability have now

become a key focus within medicine and indeed many other healthcare professions (Schostak et al. 2010).

Since April 2005 all doctors practicing medicine in the UK must now hold a 'license to practice' (GMC, 2009). To retain this license they must revalidate by demonstrating every five years they are up-to-date with their skills and knowledge, thus being 'fit to practice' (GMC, 2009). Part of the process for medical professionals keeping up-to-date is undertaken by maintaining a reflective portfolio incorporating key components of their learning experiences, performance and progression in their studies and clinical work. At MMS and other medical schools in the UK, it is a requirement that medical students meet acceptable professional standards on graduation. In their strategic document 'Tomorrow's Doctors', the GMC identified three major themes including 'Doctor as Scholar and Scientist', 'Doctor as Practitioner' and 'Doctor as Professional' for the undergraduate medical curriculum (GMC, 2009). The 'Doctor as Professional' theme includes intended learning outcomes that define the professional development of medical students. These embrace development as an independent reflective learner, being aware of one's limitations and developing an understanding of making sound professional judgments. In turn, this has placed additional emphasis on encouraging medical students to develop a professional identity and attitudes and behaviours fundamental to the practice of medicine and health care (Stephenson et al. 2001).

Many authors have explored the push for change in the education of medical students (Fraser and Greenhalgh, 2001; Reid, 2011; Goldie, 2012), and medical students' response to professional development to adequately prepare them for their future careers as doctors (Howe, 2002; Howe et al. 2010; Tiffin et al. 2011). Several of these studies recognise the difficulties of defining the construct of professionalism for medical students. Until the release of 'Medical Students: Professional Values and Fitness to Practise' (GMC, 2009), there remained no clear guidance as to what was professionally expected of medical students. This was the first time the principles of good practice had been described and as a consequence led to

committees being established at many medical schools across the UK to monitor students conduct.

For the student participants in this study there is also a ‘Faculty Fitness to Practice Committee’ for Medicine, Nursing, Pharmacy, Dentistry and Psychological Science students and a specific ‘Health and Conduct Committee’ within MMS. The overall function of the MBChB Health and Conduct Committee is to consider matters concerning a student’s health and conduct, as directed by the University of Manchester regulations and policies. Crucially, such committees highlight the standard required of doctors in training with regards to not only their knowledge and skills, but to their professional attitude and behaviour. Promoting reflective learning and critical thinking are clearly important characteristics of the professional development of medical students. There is merit therefore in exploring how best to enhance reflective discussion on issues of professional practice between groups of medical students. The implications of these explorations are discussed throughout Chapter 4 (Case Study 1) and Chapter 5 (Case Study 2).

2.5 Reflection as a Means to Promote Professional Development

Much research has been published on the role of reflection and its influence on professional development and education (Schön, 1987; Eraut, 1995; Mamade and Schmidt, 2004). The relationship is brought together by several influences, mostly stemming from the work of theorists such as Dewey (1933), Kolb (1984) and Schön (1987). Many reflective models and processes have since been developed for identifying learning needs in professional education based on their ideas, and a large and growing body of literature has investigated their use. In educational spheres it is perhaps the reflective model of Kolb (1984) that is increasingly adopted to develop reflective practice through their involvement of discussion, analysis and identifying learning needs (Mann et al. 2009). Figure 3 illustrates Kolb’s

(1984) experiential learning cycle depicting experiential learning experience as a source of learning and development.

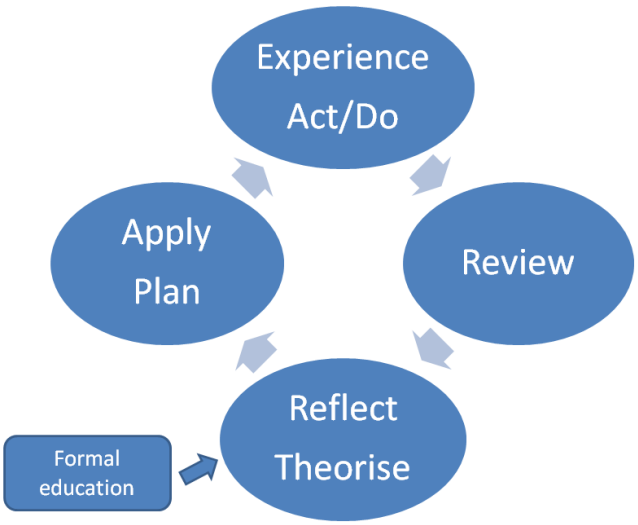

Figure 3: Kolb's Experiential Learning Cycle (1984)

However, although Kolb's (1984) model is no doubt very prevalent in educational fields, it is perhaps the reflective framework of Schön (1987) that is more associated with the professional practice of medicine. Schön (1987) identified that review and reflection can foster self-improvement by helping learners to identify their strengths and weaknesses, and thus gain insight into their behaviour. He describes two types of reflective activity: reflection *on* action (either following or interrupting an activity), and reflection *in* action (without interrupting an activity) by thinking about how to restructure the activity while it is happening. His analysis suggests the ability to interpret and develop these concepts within fields of professional expertise, enables individuals to learn and develop more effectively (Schön, 1987).

Other reflective models emphasise integrating 'critical thinking' into the structure of reflection (Boud, 1998; Brookfield, 1998). Typically such models are positioned within the constructivist approach of learning through the creation of knowledge and deductions by questioning and considering events and experiences (Huang, 2002). The inclusion of such components is thought to encourage learners to develop autonomy (Boud et al. 2001). Several authors perceive gaining an in-depth understanding of learning

experiences and events as an essential aspect of lifelong learning in professional medical development (Maudsley and Strivens, 2001; Mann et al. 2009).

2.5.1 Reflection in Undergraduate Medical Education

Numerous studies in the literature have explored the value of facilitating medical students to critically self-assess and reflect 'professionally' (Cruess and Cruess, 2006; Driessen et al. 2008; Koole et al. 2012). For example in Driessen et al's (2008) study of reflective portfolios qualitative interviews were undertaken with mentors (*n*=13) to explore the potential of reflective portfolios in medical education. Amongst their findings 'coaching' was found to be an important aspect of stimulating student's reflective abilities. Koole et al's (2012) much larger study also explored undergraduate medical students (*n*=362) reflective capabilities and found that reflection supported attributes for performance, but not specifically clinical competence. Embedding reflective learning practices from the beginning of their medical education is viewed by some authors as critical for their future development as competent clinicians (Driessen et al. 2008). Much of this is based on observations of patients, professional behaviour and clinical reasoning, cognitive development and the acquisition of skills as defined by the medical curriculum (Walsh et al. 2010; Goldie, 2013). In the literature however, many studies confine their research to implementation processes, with a focus on a theoretical, rather than an evidence-based approach, as also noted by Mann et al. (2009).

As discussed for medical students at MMS at the time of this study, the features of PPD and reflective activities were introduced in the first year of their undergraduate programme through group learning activities. This was delivered along with a modern focus on small group teaching based on learner-centred, experiential sand self-directed activities to support their professional training. In the early years of the medical curriculum adopting such strategies to encourage reflective practice has been noted as advantageous through recognising the value of group discussion and

discussion amongst peers to reflect on their clinical experiences (Austin and Braidman, 2008). In recent years however, although there has been an increase in studies exploring reflective practice in educational environments to enhance learner engagement through the exchange of views, limited attempts have been made to empirically explore strategies within online learning environments for improving reflective development amongst medical students. In Chapter 4 (Case Study 1) the implications of these issues are explored through gaining medical students' perceptions of using peer facilitation strategies for online reflective discussion activities.

2.5.2 Supporting Reflective Practice through Online Technologies

In the literature online learning strategies are generally described as e-learning, web-based learning or distance learning. In essence they involve the adoption of electronic and communication technologies as a medium to support and enhance educational practices amongst learners (Ruiz, 2006). Traditionally, within Higher Education two key approaches are favoured. First, distance learning where learners are separated from Tutors and resources with programmes of education delivered off-campus sites. Second, computer-aided learning where standalone educational programmes and resources are delivered, usually from on-campus sites. Aside to this, many courses are delivered through a combination of both approaches, commonly known as 'blended-learning' taxonomies. Garrison and Vaughan (2008:5) succinctly describe blended learning methods as 'the thoughtful fusion of face-face and online experiences'. Although such types of learning assume a level of self-direction and motivation amongst students, they have fast become the basis of today's teaching and learning and professional practice.

During the last two decades, a myriad of online technologies have been introduced to support the delivery of education. Whilst the boundaries of education have been widened through the prospect of engaging with such flexible learning opportunities, online technologies are a relatively 'new' paradigm in terms of teaching and learning. Students can advance their knowledge independently as an online learner or within a collective group

environment. Building on a constructivist view of learning, online learning activities are targeted to help create a means of synergising group collaboration with producing independent, autonomous learners. Within such environments content delivery is normally synchronous communication (occurring in real time and instant), or asynchronous communication (in written composition and delayed).

The growing interest in the adoption of online learning has no doubt led to the landscape of education changing and an increase in virtual learning environments and learning management systems, allowing learners to work independently or together outside the classroom environment. This inflated use of online learning technologies within educational spheres has been set against a complex backdrop of advances in technology, cultural and social changes and pedagogical shifts in teaching and learning practices (Stephenson et al. 2001; Young, 2002). Indeed, the use of online technologies in Higher Educational fields is no longer questioned by educators, rather the focus is now on investigating how they can be best integrated into effective educational practice (Bonk et al. 2000; Laurillard, 2002; Price and Kirkwood, 2011).

Some authors have demonstrated that a positive relationship exists between educational practice and incorporating online technologies in terms of their ability to reach higher levels of satisfaction; self-awareness and help achieve learning objectives (Schifferdecker et al. 2012; Tambouris et al. 2012). Others have focused on student interaction, participation and enhancing collaborative group learning (Joy and Garcia 2000; Ruiz et al. 2006) or the design of theoretical frameworks (Barajas and Owen, 2000; Britain and Liber, 2000; Garrison and Anderson, 2003). In the field of medical education, as teaching and learning practices continue to move away from traditional clinical settings into community placements, promoting online learning strategies remain prevalent. Indeed, several authors suggest the challenge of delivering education to dispersed learners such as medical students has fuelled the rapid increase of online technologies used within clinical educational settings (Kim and Bonk, 2006; Sargeant et al. 2006). Several

authors who have focused their attention on medical education and the use of technology present positive accounts of their effectiveness in facilitating the assessment of clinical knowledge and competence and effectively managing the medical curriculum (Thomas, 2006; Casotti et al. 2013). Others stress their value within specific areas of medical education such as community placements and general practice, virtual learning environments, the use of mobile technologies and online group discussions (Regan et al. 2002; Oliver and Shaw, 2003; Braidman et al. 2008).

During the last decade the attention of several authors exploring online environments has lent more towards the characteristics and behaviour of learners. For example in his analysis of technology within education, Prensky (2001) put forward the notion that much of the success of online learning is attributed to the fact that today's learners are what he terms 'digital natives'. Prensky (2001) defines such learners as spending their entire lives surrounded by technology. He developed this further by stressing that educators need to recognise the changes that have taken place in adult teaching and learning methods, wherein constructivist and social theory approaches are now more commonly acknowledged. It is true that today's learners entering into Higher Education are generally more accustomed to interactive learning technologies, such as social networking applications, blogs and wikis. However, Bennett et al. (2008) disputes the idea that educational approaches need to change due to the presumed different learning styles of 'digital natives'. From their analysis of evidence in the digital native literature, they conclude that there is in fact very little difference in the behaviour of today's learners to that of thirty years ago (Bennett et al. 2008). This viewpoint is of particular relevance to the current study, as online learning platforms were used to encourage the reflective development amongst groups of undergraduate medical students. Students' perceptions of using a technology based learning environment for group discussion activities are considered in Chapter 4 (Case Study 1).

2.5.3 Exploring the Online Practice of Learners

Within the literature the influence of online environments on the learning experience of students is somewhat contentious. Several authors have expressed concern about the lack of research exploring individual perspectives within such environments. Largely criticisms centre on learners not being the pedagogical focus of many reported investigations. This is in terms of exploring challenges such as motivation, marginalised students and Tutor support (Lockyer et al. 2006). In a similar vein, observations are made on the number of studies that focus only on evaluating the effectiveness of the technology, or comparing one technology to another, rather than the practice of online teaching and learning or indeed the learners themselves (Salmon, 2002). Within those studies that have paid attention to the perceptions of learners within online environments, a wide spectrum of issues are revealed; interestingly many of which appear to be inter-related.

Perhaps the most contentious issue concerned with online environments identified is that of non-participation and contributions. Engagement and interaction is often described as problematic, with the uptake of such opportunities frequently defined as limited (Guzdial and Turns, 2000; Salmon, 2002). By presenting information online in a similar structured process to that offline, many educational institutions make the presumption it will suit all learners. This, as Twigg (2001) argues, overcomes the objective of facilitating online learning experiences and empowering learners to function in a way that will promote growth and change. In their study of comparing post-graduate students in a face-face environment and online environments, Stodel et al. (2006) drew attention to identifying what may be 'missing' for learners in the online experience. They identified five key themes including robustness of the online dialogue; perceiving and being perceived by others; spontaneity and improvisation; getting to know other learners; and learning to be an online learner as significant in the overall learning experience of students. However, a limitation of their study was the small numbers of learners (n=10) that were interviewed for their research.

As interesting is the increasing evidence of a 'no significant difference' body of research that compares face-face traditional methods of teaching and learning a wide variety of subjects with online methods. Archetypal of this type of study is Russell's (1999) inventory of comparative studies (*n*=355) exploring distance education over a period of seventy years. From this, he suggested that in online environments learners can function just as well as those in face-face environments. However, most of the studies Russell explored were not experimental and the majority of studies sampled were fairly small. Chumley-Jones et al. (2002) also investigated studies on online learning (*n*=35) across different levels of medical education. Whilst their study found online learning to be useful for fostering interaction amongst students, they also reported 'no significant difference' in the learning outcomes compared to other methods of delivery. Similarly, studies such as Wutoh et al. (2004) and Hew and Cheung (2012) found 'no difference' in knowledge gained in online and face-face education amongst groups of students they investigated, nor in the degree of participation amongst the students using a blended approach and asynchronous discussion. Although the idea that knowledge is constructed through dialogue is one of the main concepts assumed by online learning, there is a lack of case studies exploring the challenges of using such approaches amongst medical students.

2.6 Using Online Discussion as an Educational Approach

Interaction and discussion play a significant role in education and promoting critical thinking. From a social constructivist perspective discussion and collaboration are viewed as crucial to the learning process (Dewey, 1933; Garrison and Anderson, 2003), still moving discussions beyond a superficial level often requires support and instruction. Online discussion forums, or discussion boards as they are also known, are frequently employed in educational fields as a method of facilitating the sharing of ideas, knowledge and experiences amongst groups of learners. Promoting interaction and collaboration through the use of such approaches has led to an increase in

their popularity. Within the Higher Education institution I am currently based, a plethora of online discussions boards are used as a collaborative approach across a range of programmes to promote discussion and reflection amongst a wide range of learners.

Earlier studies such as Eraut (1995) lend support to the value of asynchronous online discussion, by suggesting that immediate reflection is often different for learners to that when they have had time to consider and analyse an event. Several other studies have highlighted this type of communication and the positive aspects of promoting a reflective, rather than a spontaneous conversation. Advantages noted include the potential for unlimited numbers of learners to communicate without having physical proximity to each other (Hammond, 2000), and the prospect of improving self-directed learning skills and deeper levels of learning as major contributing factors to their perceived success (Pena-Shaff et al. 2005; Lockyer et al. 2006). Some authors put forward the notion that in comparison spontaneous, instant interaction can even provoke anxiety amongst learners if they feel pressured to produce a direct response (Salmon 2002; Roberts and McInnerney, 2007).

As discussed, the pedagogical rationale behind online learning is often observed through the lens of social constructivist learning theories (Rovai, 2007; Calvani et al. 2010). Much of this is based on demonstrating the importance of interaction with Tutors for enhancing a learner's journey from a social constructivist perspective (Rourke and Anderson, 2002a; Xie et al. 2006). Mostly this is in terms of improving socialisation of dispersed students (Fauske and Wade, 2004), sharing learning experiences (Hammond, 2000) and providing opportunities to debate reflectively topics of interest (Laurillard, 2002; Rummel and Spada, 2005). In medicine, and indeed other healthcare professions, the geographical dispersion of learners throughout clinical work-based environments can sometimes make face-face exchange of views on events difficult (Sargeant et al. 2006; Makoul et al. 2010). For medical students in particular, challenging situations can be frequently encountered on hospital wards or within community and general practice settings. The

opportunity to reflect, respond and share experiences with peers is encouraged through informal conversations before or after such experiences. However, because of the nature of clinical placements, the complex structure of medical student's timetables and the rigidity of patient schedules, discussion in such circumstances can often be rushed with little opportunity to respond thoughtfully to the views of others (Makoul et al. 2010). To sustain this, many medical educators view web-based applications such as online discussion forums, useful for enhancing opportunities for student debate and reflection upon their clinical experiences.

Establishing reflective group discussion activities in an online environment is seen as one opportunity to draw the notion of professionalism and reflection together to meet the needs of the 21st century doctor (Sandars and Langlois, 2005; Makoul et al. 2010). However, several challenges associated with their use are identified. In their review of the literature on online group learning, Roberts and McInnerney (2007) identified seven common problems inherent to such methods of group teaching. These included 1) student antipathy towards group work; 2) the selection of the groups; 3) a lack of essential group-work skills; 4) the free rider; 5) possible inequalities of students' abilities; 6) the withdrawal of group members and 7) the assessment of individuals within the groups. The problem of student co-operation and commitment is an issue frequently noted as crucial to the success of online discussion. Indeed, I have experienced this in action in the educational institution I am currently based, where online discussions have been introduced for various student activities with little success.

Several authors have attempted to identify the common challenges that arise, such as issues of commitment, motivation and co-operation of learners (Cheung and Hew 2005; Sandars and Langlois, 2005; Hou, 2010). Many of the challenges in contributions are related to a learner's sense of personal identity, control and security (McConnell, 2005). In their research of empirical studies (n=10), Hew and Cheung (2010) identified ten main factors that lead to limited student contribution. Limited student contribution is defined as students making few or no postings within a discussion forum, surface level

thinking or low level knowledge construction. Such factors included not seeing the point; practice of the Facilitator; personality of the learners; difficulties keeping up with the discussion; not knowing what to contribute; lack of critical skills; merely answering questions; technical aspects; lack of time and not wanting to be misunderstood. Amongst the strategies offered by Hew and Cheung (2010) to address the lack of contribution, instruction-facilitation was emphasised as key. A discussion of the challenges faced by medical students' in collaboratively working in online discussion environments is discussed in Chapter 4 (Case Study 1).

2.7 Exploring Gender Contributions in Online Discussion

The debate surrounding gender contributions in online discussions attracts much interest in the literature and demonstrates mixed reviews. Several authors suggest that online discussion forums are primarily more suited, and indeed favoured, by female learners (Gunn et al. 2002; Ono and Zavodny, 2003). Likewise it has been suggested that male learners contribute more in face-face discussions than online discussions (Gunn et al. 2002; Caspi et al. 2008; Huang et al. 2011). Although other authors imply that males and females contribute equally to discussions of a general nature (Wade and Fauske, 2004) they suggest that often females can sometimes be less comfortable with technology than their male counterparts (Caspi et al. 2008). Bostock and Lizhi (2005) take a wider view and suggest that females are generally more conscientious and motivated to engage with a learning programme than their male peers, regardless of the learning environment.

Much of the evidence however is quantified by the frequencies of messages in the online discussions explored and not on the nature of the language that is used. In their exploration of gender differences in asynchronous online discussion by Caspi et al (2008) for example, comparisons were made between participation of learners in face-face and online environments over an academic semester period. Their study identified that male learners contributed more in the face-face environments, whilst female learners contributed more in the online environment. However, their study was based

on the volume of message postings and not on the potential influence the gender of the facilitator had on the group interactions.

In another study investigating the impact of gender and student activity, Bostock and Lizhi (2005) explored messages within online discussion groups (*n*=18) with different gender mixes through the use of Henri's (1992) analysis model of interactivity and social activity. Their study also found that female learners contributed to the online discussions more than the male learners. Interestingly they identified that in mixed groups of learners females wrote less messages than in all female groups, but that male learners wrote more messages when females were part of the groups. They further suggested that the 'presence' of female learners in the groups encouraged contributions from male learners implying that the gender of one learner could therefore influence the number of messages posted by another (Bostock and Lizhi, 2005). However, this study again used the number of messages that were posted within the groups as a measure of the evaluating the discussions.

Some studies that have explored the nature of language in online discussion forums have found that female learners demonstrate traditional 'feminine language' and 'female styles' of learning such as a more co-operative approach of communication, being more empathetic or showing politeness to the rest of the group. Evidence for this is determined by exploring the language and the terms and expressions employed in the messages (Bostock and Lizhi, 2005; Huang et al. 2011). Similarly, other authors have found that messages posted by male learners are sometimes more of a competitive, autonomous and direct nature. This is based on male learners exhibiting 'masculine elements' of learning such as establishing control, adopting more formal styles of language and displaying a level of assertiveness in their interactions (Caspi et al. 2008). Conversely however, there are some studies that contest any idea of gender-based differences in online discussions completely, and argue that in reality there is little difference between male and female contributions in online discussion forums and associated aspects of their learning (Twigg, 2001; Wade and Fauske, 2004).

Although many studies have examined student participation in online discussion forums, few have closely explored the influence of peer facilitation approaches on the contributions by gender, particularly within a medical education context. The implications of this are discussed throughout Chapter 4 (Case Study 1) and Chapter 5 (Case Study 2).

2.8 Using Peer Facilitation Strategies to Enhance Online Discussion

Based on constructivist learning approaches, where students learn in a social context and work on an activity collaboratively, many educators have integrated peer facilitation strategies as a learner-centred approach. Topping (1996:322) describes peer facilitators as 'people from similar social groupings who are not professional teachers, helping each other to learn and learning themselves by teaching'. Students undertaking such a role generally assume a supportive position in order to foster learning and discussion amongst groups. Typical characteristics of peer facilitation include two variants: reciprocal facilitation (usually same-age or educational level students) or cross-age facilitation (more senior students or advanced students) in either face-face or online settings (De Smet et al. 2008). Peer facilitation has been found not only to alleviate demands on Tutors, but produce pedagogical benefits (Rourke and Anderson, 2002a; Stodel et al. 2006).

The growing use of peer facilitation in online environments has been triggered by two key influences. First, a combination of traditional classroom based teaching with technology. Second, concern expressed of Tutor-led discussions leading to Tutor-centred, rather than Student-centred discussions (Light et al. 2000; Dennen, 2005). Many authors have demonstrated the role of a peer facilitator to be effective in supporting cognitive development and motivating interaction within online group discussions (Anderson et al. 2001; Rourke and Anderson, 2002a; De Smet et al. 2008). In the study by Rourke and Anderson (2002a) for example the use of student peer teams leading asynchronous online discussion for

professional development was explored. They found that students in their study preferred peer-led discussions to Tutor-led discussions and students found the discussions to be helpful in achieving higher order thinking. However, a limitation of their study was that it only examined four students. Other studies have demonstrated that good facilitator-learner interactions can be especially positive for promoting responsibility and encouraging critical thinking and reflection amongst learners (Maudsley and Strivens, 2001; Stodel et al. 2006).

Undertaking such a role as a peer facilitator is considered to be mutually beneficial for both the facilitator and the rest of the learners within a group (Anderson et al. 2001; Rourke and Anderson, 2002a). This is in terms of increasing student-student discussions and learner motivation whilst simultaneously providing opportunities for more competent students to progress and improve their self-esteem (Cushing et al. 2011). In Wang's (2008) study four 'intellectual', 'social', 'managerial' and 'technical' categories of student facilitation in online discussion were explored. Results showed that intellectual, social and managerial categories were more applied than technical and that summarising discussions was perceived to be the most important facilitation skill. However, this study was concerned with post-graduate courses and the discussions were led by two facilitators not one as in this study. In addition the discussions explored only lasted for one week, and not a full academic year as explored here.

Peer strategies within medical education are now well established for teaching and learning in a formal and informal manner with one student generally facilitating another group learning experience. Such approaches are found to be effective for improving clinical skills, communication, team work, and examination performance (Ten-Cate and Durning, 2007; Sobral, 2009) and role modelling of professional behaviour (Drouin et al. 2006; Yusoff et al. 2009). However, much of the evidence in the field of medical education tends to focus on the teaching of practical clinical skills. In a study by Curran et al. (2005) participation amongst medical registrars and facilitators in online discussions were examined. They found a correlation

between the volume of messages posted and the number of discussion topics that were addressed in the online discussions explored. However, their study was again largely based on frequency counts. Kamin et al. (2006) specifically explored facilitation amongst third year medical students studying in online PBL groups. Whilst they highlighted the specific skills required of a facilitator, the discussions they examined were facilitated by clinicians and not students, and furthermore they only examined the behaviour of one clinical instructor. In general there is a paucity of research conducted on the use of online peer facilitation within the same age group in a medical education context. In Chapter 4 (Case Study 1) and 5 (Case Study 2) the implications of using same age peer facilitators for online discussions amongst medical students is discussed.

2.8.1 Identifying Effective Online Facilitation

Defining effective facilitation within online discussion forums is difficult to determine clearly in the current literature. Some authors direct their focus towards the skills of a facilitator as a key aspect of enhancing participation and interaction in online discussion. Rowley (1999) for example describes the qualities he perceives to be necessary for a 'good facilitator'. These include being committed, accepting, providing instructional support, an effective communicator, a continuous learner and displaying optimism. A tall order some might say. It has been put forward that facilitation itself is a skill that needs to be learnt, practiced and experienced, and that a new skill set must be acquired by facilitators to function effectively in online environments (Dewar and Whittington, 2000). Rowley (1999) emphasised pre-empting that the skills required for effective facilitation are inherent in those individuals who perform the role of a facilitator. However, in his research the role of the facilitator was shared between students and may have lessened their responsibilities somewhat, and moreover was a relatively small scale study.

The perception of Rowley (1999) was later echoed in the research of Salmon (2000; 2002) through the model she devised for analysing skills required of online facilitators or 'e-moderators' as she termed them. In her model Salmon

(2002) summarised five stages as access and motivation, online socialisation, information exchange, knowledge construction and development. She suggests that as facilitators intertwine within these different stages, certain abilities are critical such as facilitating consensus, acknowledging contributions, promoting and encouraging discussion and helping students make meaning of their learning. In another study by Oliver and Shaw (2003) concerned with how behaviours change in online discussion due to the skills and performance of a facilitator, it was demonstrated that whilst it is likely that there may be more postings within a discussion if a facilitator is effective in their role, this did not necessarily translate into a greater depth of learning. Interestingly, they highlighted that students' perceived enthusiasm of a facilitator was one of the most motivating factors for participation in discussion. In Heuer and King's (2004) study the social behaviour of online facilitators in natural settings by direct observation of their interactions was investigated. Their study, as did Salmon's (2002), outlined key attributes considered necessary for an effective online facilitator namely a planner, model, coach, facilitator and communicator. Sargeant et al. (2006) also focused on the skills required of an effective facilitator. Their qualitative study of clinicians (*n*=50) found two key skills of a facilitator to emerge, that of a) being able to create a comfortable environment and b) enhancing the educational value of the group discussions. In their study they also emphasised the importance of instruction and preparation for the role of the facilitator and developing effective facilitation techniques to engage learners within a group. In a more recent study by Dunlap and May (2011) measuring the behaviour and performance of facilitators, they found that assessing facilitators and implementing a review resulted in a marked improvement in the discussions which in turn, influenced student satisfaction. However their study was limited in that it only explored two facilitators and four groups of learners, in contrast to the current study where forty facilitators and forty groups of online learners were explored.

Other studies have focused on the significance of the context and culture of online discussions in terms of ensuring efficient facilitation in the discussions.

Several authors recognise the social impact of being remote from central resources and how it may impinge on interaction amongst the groups (Twigg, 2001; Sandars et al. 2007). Issues highlighted as imperative include clarifying aims and establishing ground rules of discourse (Sandars and Langlois, 2005; Buelens et al. 2007); 'Socratic questioning' and appreciating the contribution of others for increasing contributions from participants within online discussion (Hew and Cheung, 2008). Effective communication is one aspect that has been frequently highlighted as an important contextual factor for guiding online discussions (Wallace, 2003; Buelens et al. 2007). The usual 'unspoken' cues of face-face social communication that help establish a shared communication model are not accessible in online discussion. Breakdown in communication has been found not only to lead to poor retention rates, but to conflict occurring between facilitators and other learners within a group (Wallace, 2003). In their study on peer facilitation techniques in online discussions, Ng et al. (2009) compared transcripts from courses delivered within a post-graduate programme. They emphasised how contextual factors and face-face opportunities for communication could influence participant's interaction in the discussions. However their research was conducted with post-graduate students and not undergraduate students as in this study, and was with much smaller numbers of students over a shorter period of time.

A limitation of many of the studies that have investigated student-facilitation techniques is in defining what effective facilitation techniques are from the perspectives of the learners themselves (Hew and Cheung, 2008). The use of reciprocal peer approaches for online discussion activities in a medical education context is not widely explored in the literature, nor is the significance of instructing peer facilitators to enhance online group discussions to help deepen understanding. Establishing what medical students perceive to be important in adopting such pedagogical approaches is discussed in detail in Chapter 4 (Case Study 1).

2.8.2 Training Facilitators for Online Discussion

The instruction and preparation of facilitators for online discussion is another aspect often highlighted in the literature. Namely this is explored in terms of guiding groups of learners to more advanced levels of social interaction, collaboration and learning (Twigg, 2001; Salmon, 2002; Sandars et al. 2007). Many authors place emphasis on the quality of training given to facilitators, and advocate that regardless of the environment peer facilitation is less successful without any prior guidance or training (Kassab et al. 2005, De Smet et al. 2008). In his exploration of training facilitators for effective instruction in an online environment Rowley (1999) cautioned that as educators we should not assume that students, who may be successful at integrating technology into their learning, will automatically make 'a good facilitator'. Similarly other studies have recognised that facilitating skills may not be intrinsic, and moderating skills in particular may need to be taught and reinforced before and indeed during the facilitation process. This was found to occur when facilitators become aware that they are not just responsible for themselves, but that they have obligations to others in the group that need to be met to maintain their position in the group (Anderson et al. 2001).

Along similar lines, Rourke and Anderson (2002a) examined characteristics of effective online facilitation and the outcome of students leading online discussions. They compared samples of asynchronous online discussions in peer-led teams to Tutor-directed discussions and established that students in their study found the peer-led teams to be more 'interesting' , 'structured' and 'meaningful' than the Tutor-led discussions, despite being little difference found in the quality of discussion as assessed by the researchers. Interestingly they identified that this was largely due to the training and preparing of the facilitators in skills to guide the student discussions successfully. They further acknowledged that the relationship between preparing facilitators and stimulating a groups' motivational drive, helped them focus more on a task, and increase their own knowledge.

Several other authors have stressed the importance of preparing students for the role of a facilitator for online discussion activities (Pawan et al. 2003). Using Garrison et al's (2000) framework Pawan and colleagues demonstrated that receiving training was found to be crucial for students before commencing such a role in online discussions in order to help the discussions progress (Pawan et al. 2003). Likewise, Holmes (2005) investigated the complexities involved in facilitating asynchronous discussions and emphasised the importance of facilitators having the skills to deal with the intricacies of managing online discussions and methods of augmenting student learning. However, many of these studies examined discussions over a very short period of time and findings were based on discussion transcripts and not on perceptions gained from the students themselves or preparation of facilitators. In Wang's (2008) study of peer facilitators, although training for the role of a facilitator was emphasised through demonstrations of moderated discussions and 'warm up' discussion forums, the effect of the training was not evaluated. The implications of the impact of training and preparing facilitators are discussed throughout Chapter 4 (Case Study 1) and Chapter 5 (Case Study 2).

2.9 Developing Online Communities of Learners

In an online community of learners, interaction is normally facilitated through the use of web-based technology. Whilst there is no defined number of members of an 'online community' the term generally refers to a group of people with common interest or focus, who interact online rather than face-face. Such learning communities are recognised as having a distinct place in education, based on the philosophy of collaborative learning where students communicate with each other to build and evaluate new knowledge. Garrison and Anderson (2003:23) suggest that 'participation in an education community can encourage cognitive and social independence amongst learners simultaneously'. Much of the development within communities of learners is driven by the increased importance placed on social interaction within educational practice, and the augmented emphasis of constructivist

models of learning. Building and sustaining communities of learners is now recognised as a central component of adult learning theories and has become highly popular in many educational programmes of learning. Garrison et al. (2000: 91) consider that an educational community of inquiry occurs when 'ideas are generated and knowledge is constructed through the collaborative and confirmatory process of sustained dialogue within a critical community of learners'. Creating a community of inquiry amongst learners where interaction, reflection and critical evaluation of ideas take place has been found to not only be valuable, but essential in many Higher Educational contexts (Stodel, 2006; Hou, 2010).

The concept of a 'community of learners' is influenced largely by the work of Lave and Wenger (1991) who focused on how learners share knowledge within a group, and the cultural influences involved in building a 'community of practice'. Many authors have since described the potential benefits of online communities, mostly in terms of advancing knowledge and interaction amongst groups of learners (Thompson and MacDonald, 2005) and deepening understanding and facilitating collective learning (Wenger, 1998; Roberts and McInnerney, 2007; Garrison, 2011). In medical educational fields, the importance of integrating online communities of learners is increasingly recognised. Although medical students have access to varied information sources, knowledge and sharing experiences gained through social interaction and group discussion forums with their peers is viewed as a valuable resource (Lave and Wenger, 1991; Hou, 2010). Twigg (2001) notes significantly, that for learners such as medical students, the opportunity for a community of learners to develop can be jeopardised if there is a feeling of isolation. He further cautions that even with well-designed courses and trained facilitators, educators must not assume that communication will automatically take place.

Many of the challenges associated with online learning communities are reported in the literature, and at first glance it could be assumed that online learning may even be ill-suited to the development of community centred learning. As a pedagogical strategy they have been found to lack elements of

social interaction that can develop more easily in a natural face-face setting. Previous studies such as Murphy (2004) who explored critical thinking in online groups of graduate learners emphasised the importance of expression of emotions, openness to contributions of others and group collaboration when transferring learning to online communities. She highlights the challenge for online learners in 'reading emotions' that are normally visible in face-face communication. Later Stodel (2006) resonated with Murphy (2004), and illustrated that developing and maintaining an online learning community relies heavily on the group being able to communicate effectively and the facilitator to assist dialogue. Sandars and Langlois (2005) further advised that neglecting such aspects of online communication, could impede on the creation and binding of a community, and thus have negative effects on participation and interaction of learners such as medical students amongst the communities. While the adoption of online communities of learners is increasingly implemented in educational practice as a strategy to encourage group collaboration, the impact on the development and interaction amongst medical student communities has not been broadly researched. Exploring the interaction and development amongst such communities of learners is discussed in Chapter 5 (Case Study 2).

2.9.1 Investigating Online Communities of Learners

In order to gain a better understanding of collaboration and engagement amongst online communities, undertaking analysis of the patterns of behaviour and interaction of learners is viewed as a valuable exercise to undertake (Dennen, 2005). Many authors highlight the significance of this in terms of appreciating aspects of facilitation, reflective thinking and processes of knowledge construction (Garrison et al. 2000; Pena-Shaff and Nicholls, 2004; Kim and Bonk 2006). However, the composite nature of online communities sets a challenge in selecting an appropriate framework for analysis as many of the existing frameworks offer multiple descriptions. One factor commonly used to determine online collaborative learning is identified through the quality of knowledge construction that students engage in (Hew and Cheung, 2010). However, different understandings of knowledge exist,

albeit it is broadly referred to as information, ideas, facts, opinions, experience, and procedures. In medical education fields in particular, difficulties have been reported in establishing a consistent means of analysing online interaction and participation amongst learners (Buelens et al. 2007; De Wever et al. 2009).

Over the last decade several theoretical models have emerged to evaluate online learning communities. Many such models are loosely based on Bloom's taxonomy, commonly used in educational programmes to explore cognitive levels of activities (Bloom and Krathwohl, 1956). Early evaluative tools such as the SOLO (Structured objective learning outcomes), taxonomy devised by Biggs and Collins (1982), explore levels of understanding and cognitive development. Their model emphasises five different levels ranging progressively from pre-structural (unconnected information) to extended abstract (making connections and transferring principles). In contrast to Blooms' framework however, the SOLO model is structured around how learners process understanding and learning activities. However, limitations of this model are that it only categorises the level of learners at one specific time. Once a learner is categorised at a specific level, the model assumes that the learner will then stay at this level (Rourke and Anderson, 2002a). The specific online discussions explored in this research were during an academic period, and it was therefore assumed that students may not have remained at the same level throughout this period.

A model perhaps most cited in the literature is that proposed by Henri (1992). Based on exploring interactivity and social activity Henri's (1992) model recommends classifying the content of online discourse through five different dimensions: participative, social, interactive, cognitive and meta-cognitive. Later the model was adapted with an increased focus on interactivity within online dialogue (Hara et al. 2000). Observations made in this study concerned the crucial role a facilitator plays in determining the depth of dialogue that occurs within group discussion. However there were shortcomings identified in the model such as a lack of precision, ill-defined criteria and difficulties in assessing discussion from within the five

dimensions (Rourke and Anderson, 2002a). In addition, the theoretical base of the model (cognitive and meta-cognitive knowledge construction) has been noted as being ineffective for evaluating constructivist student-centred discussions, where learning is based on the shared construction of knowledge, such as the type explored within this research (McLoughlin and Luca, 2002; Pena-Shaff and Nicholls, 2004). Based on Henri's (1992) work, Gunawardena et al. (1997) later developed a five stage 'interaction analysis model' to examine meaning and different phases in the construction of knowledge. Gunawardena and colleagues' study found that participants within online communities rarely move beyond the first stage determined by the model namely 'sharing and comparing' information. Whilst the work of Gunawardena et al. (1997) is useful, in that it is a social constructivist approach, the model was developed in the context of knowledge constructed within debate; knowledge constructed outside the format of debate is therefore a limitation.

Other researchers exploring the development of online communities emphasise the importance of investigating 'critical thinking' amongst the groups. Models such as Newman et al's (1996) for example proposed four key elements for investigating critical thinking skills including contribution, verification, clarification and elaboration. In contrast to the models developed by Henri (1992) and Gunawardena et al (1997), where analysis is based on meta-cognitive elements, Newman and colleagues used entire messages as a unit of analysis and centred on individual responses rather than ongoing interaction that occurred in groups to calculate percentages of agreement within discussions. However, this model makes threads of a discussion and instances of members responding to others within a group more difficult to analyse and is now perhaps somewhat dated. Influenced by Henri's model many researchers have been prompted to take up more challenging analysis.

Another popular instrument noted in the literature is that devised by Pena-Shaff et al. (2005). They developed an epistemological framework for analysing interactions in online discussion environments based on a list of indicators generated to explore what they term as 'interactive' and

‘monologue’ types of messages in online discourse (Pena-Shaff et al. 2005). In a later study they analysed student participation and construction of meanings, specifically within asynchronous bulletin boards. Their study determined that asynchronous online environments could provide students with opportunities to develop cognitive skills such as reflection and demonstrated motivation to be an internal force that drives learners to engage in a particular behaviour. Using a number of different models Schellens and Valcke (2006) also measured the degree to which asynchronous discussion forums could reach higher levels of knowledge creation and stressed the importance of models for determining critical thinking in asynchronous online discussion. Within many of these models however is a tendency to gather quantitative data on the levels of participation within communities, thus making results often hard to generalise. However, as noted by Kim and Bonk (2006), the quantity of contributions to online fora may not be concomitant with the level of critical thinking that is displayed by the participants.

Building on many of these observations it is perhaps Garrison et al’s (2000) Community of Inquiry theoretical framework that dominates the literature as a tool for researching online discussion in a Higher Educational context. The early work of Henri (1992) became a catalyst for the development of the Community of Inquiry framework where interaction and the function of the instructor of moderator of online discussion are a pivotal element. Taking a social constructivist view of learning, the Community of Inquiry framework centres on a collaborative, inquiry approach focusing on dialogue and reflection influenced by Dewey’s progressive understanding of education (Dewey, 1933). In this sense the framework represents a process of creating a deep and meaningful (collaborative-constructivist) learning experience through the development of three interdependent elements - Cognitive, Social and Teacher presence. The significance of presence is brought to the fore through these three main elements and the model assumes that learning occurs more effectively when these three presences interact and overlap with each other.

Within the cognitive phase of the model lie four categories of critical thinking, reflected by initiation, exploration, integration and resolution. Deeper insight into cognitive development, not always apparent in quantitative levels of participation, have been found to be drawn from investigations using the model (De Smet et al. 2008; Hew and Cheung, 2008; Shea and Bidjernao, 2009a). When applied to asynchronous group discussion investigations, Garrison et al. (2000) found that activity within online communities commonly transpires in the first two stages of the model (initiation and exploration), and that very little activity occurs in the third and fourth stages (integration and resolution). Along with Garrison et al. (2000) other authors have stressed the importance of improving facilitation skills in order to move learners from the first to the third stage of the model (Garrison and Anderson, 2003; Pawan et al. 2003).

Since developing the Community of Inquiry framework several researchers have used it to measure the three different presences in an online community of learners and highlight its value for determining experiences in online communities (Arnold et al. 2005; Shea et al. 2006; Cleveland-Innes et al. 2007; Akoyl and Garrison, 2008; 2011b). Furthermore the model has been used extensively in qualitative studies (Heckman and Annabi, 2005; Stodel et al. 2006), with individual components of the framework examined empirically (Richardson and Swan, 2003; Arbaugh et al. 2008; Swann and Ice, 2010). A detailed description the Community of Inquiry model is given in Chapter 3 (Section 3.29). Although the Community of Inquiry framework is aimed at exploring group online learning in a Higher Educational context, to date much research has focused on analysing post-graduate learning, or single presences of the model in online discussion instead of the framework as a whole. Limited studies have used the model to explore online collaboration purposely within an undergraduate context or within a medical education context. Using the Community of Inquiry framework as a lens to explore the three presences of the model within a context such as the current study would therefore contribute to expanding the model further. Implications of using the Community of Inquiry model in this respect are examined in Chapter 5 (Case Study 2).

2.10 Issues Raised in the Literature

Online discussion forums are viewed by many educators as one of improving collaboration and reflective practice amongst groups of campus based or distant learners. Yet, few studies have empirically investigated using such strategies amongst medical students who are learning in geographically dispersed clinical environments. Furthermore, although peer facilitation is identified as one opportunity to develop group collaboration in such environments little research has been undertaken into exploring the benefits and challenges of using such a student-centred approach (Rovai, 2007). In addressing the challenges of adopting peer facilitators in an online environment, previous studies tend to focus on the characteristics of the facilitator and not on their potential to influence the interactions that place in the discussions. In addition previous research on peer facilitators in a medical education context are more inclined towards exploring the skills of a practical or clinical nature in contrast to the context of online discussion.

Whilst the literature recommends a certain skill set is needed for effective facilitation of online discussion (Dewar and Whittington, 2000); the impact of training and preparing facilitators to acquire such skills is not widely addressed (Sandars and Homer, 2008). Investigations into the synergy between training facilitators in moderating skills and the subsequent social interaction that occurs amongst online groups would therefore be beneficial in providing a deeper insight into these issues. Although the social dynamics of collaboration and communication amongst medical students is identified as crucial in understanding and enhancing student learning in online contexts (Sandars et al. 2007), little exploration has been previously undertaken to understand the different learning environment that online discussion encompasses.

On a related note, analysing interaction amongst online communities of learners is acknowledged in the literature as important for understanding how groups of learners effectively collaborate and engage (Dennen, 2005). Still few studies examine how asynchronous online discussion may develop such

critical reflective skills amongst medical students. Whilst several studies report on the benefits of online discussion to enhance reflective practice, there is a lack of studies that critically analyse the discussions that subsequently take place. Furthermore, studies that have examined the development of online communities of learners make a wide variety of comparisons, based on a multiplicity of measures. Such differences in the comparisons make synthesising evidence of the different approaches problematic (Sandars and Langlois, 2005). In addition many explorations have focused on the frequencies of participation but have not explored qualitative aspects of participation that may impede on the development of a community (Henri, 1992; Gunawardena et al. 1997).

Whilst several studies highlight the importance of critical analysis of learning experiences, professional behaviour and clinical practice within the literature it appears somewhat blurred how these and similar attributes, can be best enhanced in an online learning environment (Cruess and Cruess, 2006; GMC, 2009). Using the Community of Inquiry model devised by Garrison et al (2000) within a medical educational context would therefore help to extend the framework further from its original context of exploring online communities of learners.

2.11 Identifying the Research Gaps

At the same time the literature reports the unique opportunities for learner-centredness offered by online learning, the challenges created are also noted. Using peer facilitators is recognised as one way of supporting interaction in online group discussion through its flexibility and the opportunity for students to share experiences. Yet examination of the literature reveals a lack of understanding how such strategies can function best for students dispersed in elements of their learning programmes such as medical students. More directed research focusing on students' perceptions and the explicit features of using peer facilitators in this context will yield insight into fostering the development of an online community of reflective practice amongst medical students. Previous studies differ from the current study in

that many are conducted with far fewer student numbers, over much shorter time scales, and in less complex learning environments than demonstrated here. The current study explored both perceptions of medical students and the text output from online discussions amongst groups of medical students over a two year period.

Accordingly this study set out to address the following research aims echoed from the themes raised above:

- What do undergraduate medical students perceive as an effective Student Peer Facilitator for online discussion activities?
- What are the benefits and challenges of using Student Peer Facilitators in online discussions as observed by undergraduate medical students?
- What impact does amending the training for Student Peer Facilitators to include e-moderating skills have on the cognitive development of online discussion amongst a community of learners?
- Does the gender of students influence the nature of facilitation and interaction within an online discussion environment?
- What are the broader issues for educational practice in implementing Student Peer Facilitators in online discussion groups?

Table 2 provides an overview of the research aims of the study and where they are presented throughout this thesis. By investigating the subsidiary questions, key themes evolved which in turn enabled the research aims to be addressed.

Research Aims	Presented In
1. What do undergraduate medical students perceive as an effective Student Peer Facilitator for online discussion activities?	Case Study 1 (Chapter 4)
2. What are the benefits and challenges of using Student Peer Facilitators in online discussions as observed by undergraduate medical students?	Case Study 1 (Chapter 4)
3. What impact does amending the training for Student Peer Facilitators to include e-moderating skills have on the cognitive development of online discussion amongst a community of learners?	Case Study 2 (Chapter 5)
4. Does the gender of students influence the nature of facilitation and interaction within an online discussion environment?	Case Study 2 (Chapter 5)
5. What are the broader issues for educational practice in implementing Student Peer Facilitators in online discussion groups?	Case Study 1 and 2 (Chapters 4, 5, 6 and 7)

Table 2: Presentation of Research Aims throughout Thesis

2.12 Chapter Summary

This chapter has presented a review of the literature relevant to the research topic of this study. Broad issues surrounding the use of students as peer facilitators for online discussion in a medical educational context were discussed along with other key influences. As a result the design of this study was informed by the research literature discussed throughout this chapter. The following chapter will now present a discussion on the research principles of this study, the rationale underpinning the methodologies and methods that were adopted, and the educational context of the study.

Chapter 3 : Principles of Methodology

3.1 Overview

In the previous chapter a review of the literature was presented from the perspective of a number of areas related to investigating peer facilitators in an online discussion environment. As discussed, there is a lack of studies that have explored such approaches in a medical education context (Hew and Cheung, 2012). To address this gap, this study employed a range of data collection methods presented as two case studies including questionnaire, interview and focus group methods and an in-depth examination of the text output from a sample of online student group discussions.

The purpose of this chapter is to describe the research design, data collection and analysis undertaken to address the research aims as outlined in Chapter 2. First, the theoretical approaches and design principles that underpin the study are discussed. Second, implementation and recruitment of the Student peer Facilitators for the online discussions are described. This leads on to issues of validity, ethical considerations and trustworthiness of the study. The chapter then concludes with two separate sections that discuss the different methods used in each of the two case studies (Case Study 1 and 2).

3.2 Theoretical Influences

A vast amount of research surrounds the debate on methodological approaches, their underlying principles and their application to conducting educational research. One of the key arguments centres on whether the social world we live in can, or indeed should, be studied using comparable principles and procedures as the natural sciences (Guba and Lincoln, 1994). In scientific positivist models, reality is viewed as stable and something that can be represented by absolute or varying degrees of generalisability. Such

models describe educational research in terms of measurable evidence, observable phenomena and objectivity, using the same principles of knowledge production that are commonly used in the natural sciences (Bryman, 2008). Methods and models commonly associated with positivist philosophies essentially, but not always, conceptualise research as involving variables that can be 'counted'. Often a pragmatic, deductive approach is taken when conducting such research. In medical education such approaches are considered effective in exploring technical or clinical aspects of medicine with respect to objectivity, reliability and generalisability (Norman and Schmidt, 2000). However, it is often debated whether the positivist, quantitative approach to analysis is appropriate for exploring individual and social experiences and processes (Cresswell, 2003).

A second view, often placed in opposition to quantitative research, is that presented by the constructivist or interpretive standpoint. Research surrounding online learning practice increasingly leans towards the constructivist-interpretative paradigm centring on views, meanings and experiences of participants (Patton, 2002). As in other constructivist methods, the researcher's own perspective and understanding is brought to the fore as part of the research process. Such approaches are usually associated with grounded theory, ethnography, phenomenology and case study methods (Glaser and Strauss, 1967; Silverman, 2005). Since the constructivist-interpretative approach focuses on investigating elements of experiences and social practice, it is often linked to qualitative methodologies. Indeed, it is the link to social practice that makes research design under the constructivist umbrella fundamentally different to that of the positivist.

As social and behavioural sciences are increasingly integrated into education, there is now a growing acceptance of multi-paradigmatic research in medical education research combining both positivist and interpretivist elements (Bowling 2002; Schifferdecker and Reed, 2009). This was particularly significant for this study, as interaction between people and

technology is usually considered under the umbrella of the social sciences rather than the physical sciences.

As discussed constructivist methodologies tend to focus on the study of human beings and pursue a deeper understanding of interpretations through the emphasis of words and ‘meanings’ rather than quantification. They strive to overcome subjectivity by obtaining multiple viewpoints and generating ideas through inductive reasoning. Guba and Lincoln (1994) suggest bringing a more scientific format into qualitative methods can be beneficial, as no single type of evidence is likely to be sufficiently valid on its own. Differences that emerge are thus not seen as problematic, but rather facilitate the appreciation of variances (Tashakorri and Teddlie, 2003a). Such an approach was adopted throughout this research and the next section will discuss the design principles and rationale underpinning their selection.

3.3 Research Design Principles

3.3.1 Using a Case Study Approach

Yin (2009:129) suggests that case studies are ‘typically about complex events and behaviours occurring within more complex real life contexts’ and hold much value in gathering multiple participant perspectives in order to answer specific research questions. The quintessential characteristics of case studies are that they strive towards an understanding of cultural systems of action and can offer the opportunity to conduct investigations into a phenomenon within a natural setting (Yin, 2009). As Robson (2002) notes case studies tend to opt for analytical rather than statistical representation and aim to develop a theory which can help researchers understand similar phenomena or situations. Stark and Torrence (2005:33) observe that case study approaches to research entails exploration of ‘social construction of meaning in-situ with an emphasis on study in-depth’. In other words, context and purpose matter. Such methodologies are thought to dig deeper into what is actually going on rather than just skimming the surface. In turn this

facilitates gaining ownership of a study whilst remaining objective (Stark and Torrence, 2005).

There is now a growing volume of case study research and evaluation studies focusing specifically on online teaching and learning practices (Stephenson, 2001). Case study methods were chosen for the current study as an interpretivist approach to investigate using Student Peer Facilitators for online discussion activities. Such approaches are noted as useful for asking 'how' and 'why' questions, and moreover dealing with a variety of evidence from different phenomena and contexts (Bell, 1999; Robson, 2002). Stake (1995) identifies three main types of case study: instrumental, collective or intrinsic case study. The intrinsic case study approach is usually undertaken to gain a better understanding of a specific 'case'. Taking Stake's approach into account, the nature of the two case studies in this research was intrinsic in nature, in that they offered the opportunity to investigate a phenomenon that had not been widely explored.

Adopting a case study approach has been found to be particularly useful when exploring new initiatives and complex interactions in natural settings such as medical education (Cresswell, 2003; Schifferdecker and Reed, 2009). Furthermore, conducting a case study, anchored towards principles of mixed methodology research design enabled data to be gathered from multiple sources as suggested by Cresswell (2003). This offered the prospect of capturing the uniqueness of the student participants in this study, the different learning environments of the study (face-face and online), and the natural setting of the student participants as progression of the research.

3.3.2 Addressing the Research Aims

Taking these different perspectives into account, a case study approach was judged to connect well with researching the uniqueness of the topic explored and the learning community where participants in this study were positioned. Nonetheless, using a multi-case study design approach throughout this study meant there were some differences in the two case studies:

3.4 Recruitment of Student Peer Facilitators

The population of this study consisted of medical students in the third year of their professional medical training at MMS in the academic period of 2007 and 2008. Access to the population was negotiated with students and senior members of academic staff within MMS. During the first year of the study a total of 2,100 students were registered on the medical degree programme and 2,800 in the second year respectively. The student cohort in the first year began their medical training in September 2004 and comprised of 473 students. In the second year students started their training in September 2005, and comprised of 452 students.

A general announcement for expressions of interest in the role of the Student Peer Facilitator was placed on the medical student intranet (MedLea) in September 2007 and September 2008, aimed at all third year medical students. From a total of 473 in 2007, and 452 in 2008, there were 155 students who volunteered to undertake the role (*n*=76 = 2007 and *n*=79 = 2008) ranging between 21 and 38 years of age. Volunteer students were broadly representative of the student cohort they were recruited from in terms of gender and ethnicity and the sample was therefore not considered to differ from the entire student population. In addition, volunteers were evenly spread across the four Teaching Hospital sites linked to MMS, as described in Chapter 1. Alongside the volunteer students, twenty-five designated Clinical Mentors (practicing clinicians) from each of the Teaching Hospital sites agreed to support the Facilitators by providing feedback during their portfolio reviews in both years of the study. However, as the role of the Clinical Mentor was not involved in any way in the online discussions, this role was not explored as part of these investigations.

3.5 Preparation and Training of Student Peer Facilitators

In the first year training and preparation for the role of the Student Peer Facilitator was based on broad facilitation materials generated by the 'Students as Partners' (SaP) team at the University of Manchester. At the time of this study the SaP team was managed by the Teaching and Learning Support Office who co-ordinated peer assisted study schemes through student-led activities. During the first year five training sessions were held with fifteen student volunteers, and each session lasted approximately two hours.

In the second year, modifications were made to the format of the training sessions for Facilitators, in that they were lengthened to include other activities. Although the common aspects of facilitation covered by the SaP materials were used as a foundation, these were amalgamated with the introduction of e-moderating skills for the online student discussions. This included the introduction of the principles of e-moderating and presenting activities that enabled students to discuss how they would respond to typical situations in online discussions downloaded from the previous student cohort. For example dealing with non-responsive group members; keeping the discussions active; clarifying and summarising aspects of the discussion and moving the group along onto another topic of discussion. During the second year, five training sessions were held with sixteen volunteer students, and each session lasted approximately three hours.

From the ten training sessions held, eight took place on the main University campus and two were held at the Preston Royal Infirmary (Teaching Hospital A) to prevent students based at this hospital travelling back to the main University (a distance of around 50 miles). Once delivery of the training sessions had taken place, students were then encouraged to raise queries and given the opportunity to confirm or decline their interest in undertaking the role. At this stage, and indeed throughout the whole process in both years, no students declined to commit to the role of the Student Peer Facilitator.

3.6 Establishing the Online Discussion Forums

To enable the students to partake in group discussion surrounding issues of professionalism, online forums were established within the WebCT (Web Communication Technology) learning platform, the generic online learning platform at the University of Manchester at the time of this study. The student cohort in both years was separated into pre-defined PBL groups of approximately 8-10 students (*n*=63 groups/per year). These groups had already been pre-selected by the MBChB programme administration team as per normal practice at the beginning of each academic year. This was based on randomised computer selections within the MedLea computer system typically grounded on mixing students by age, gender, undergraduate and post-graduate level, ethnicity and international status. In both years within the WebCT platform all student groups had access to a private group discussion area for their PBL group and a general discussion area that was available to the whole Year 3 student cohort. Although messages posted in the private discussion areas could be seen by me as Tutor and researcher and the Academic Lead for Portfolio (albeit with the knowledge of all students), no involvement took place in any of the interchanges at any time during the two years of these investigations.

Student groups were then arranged practically within WebCT by their allocated Teaching Hospital sites (coded as Hospital A-D) and each student group was assigned one trained Student Peer Facilitator. Where possible, Facilitators were allocated to their current PBL student groups. Groups that had more than one trained Facilitator were either allocated to another group or the role of the Facilitator was shared (one semester period each). It is suggested that interactions in online environments are more likely to be successful if participants have the opportunity to meet each other first and build a shared understanding of the task in hand (Su et al. 2005). Taking this view into account, students were encouraged to arrange a face-face meeting with their allocated groups to establish a shared purpose and clarify the role of the Student Peer Facilitator before the discussions began.

3.6.1 The Online Group Discussion Activities

In order to sustain learner-centredness and promote reflective thinking students were encouraged to reflect on their own ideas, the ideas of others in the groups and engage collaboratively in specific discussion activities that were set concerning professionalism. In line with constructivist approaches as discussed in Chapter 1, these activities were centred on real-life authentic situations. In both years for the first semester the group activity was aimed at exploring professional issues relevant to third year medical students and based around the key question 'What are the issues surrounding professional behaviour for medical students?'. The purpose of the exercise was to promote collaborative reflection and discussion of issues of professionalism students had encountered during their clinical placements. Details of the discussion activity set for the student groups can be seen in Appendix A.

In closing the discussions, each group was then asked to reach a 'consensus' view of what they considered to be modern professional behaviour, pertinent to third year medical students, based on the GMC's 'Good Medical Practice' framework (GMC, 2003). Ultimately students' demonstrated evidence of their participation in the online discussions in the portfolio reviews that were held on a face-face basis with their designated Clinical Mentors at the end of the academic year. An outline of the steps taken to recruit and implement the Student Peer Facilitators can be seen in Figure 4.

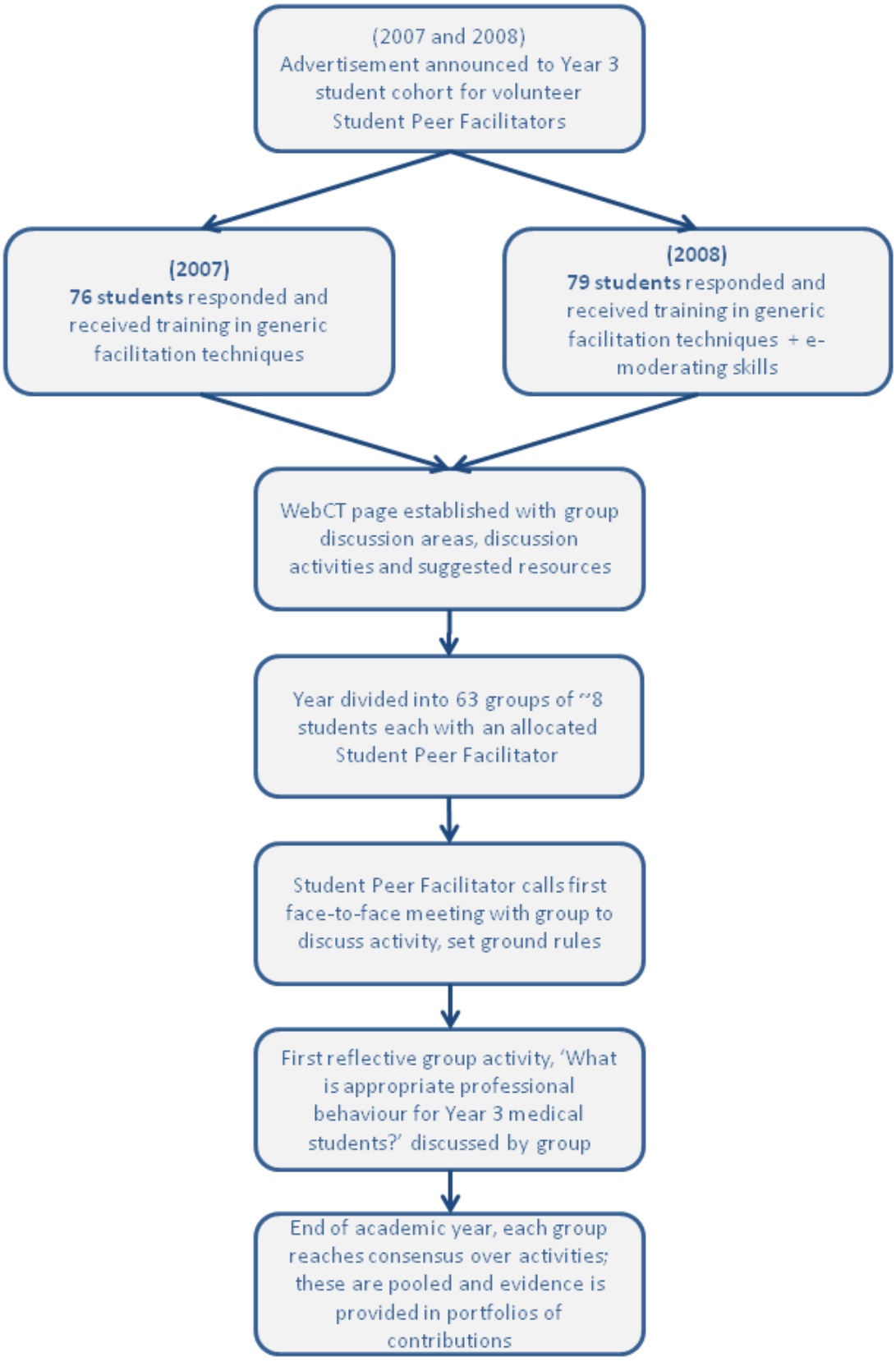

Figure 4: Implementation Process of the Student Peer Facilitator Scheme

3.7 Validity of Methodologies Used

Throughout conducting this research I have attempted to be systematic and transparent in the data collection methods and sampling procedures that were adopted. However, as noted by Bryman (2008), within case study research validity can sometimes be problematic because of sampling, subjective data collection and interpretation of results. Using mixed methodologies offered a number of benefits such as an opportunity to a) gather data from multiple sources b) avoid potential bias of a single research method and c) help strengthen and generalise findings from within the study (Tashakkori and Teddlie, 2003a; Cresswell, 2007; Yin, 2009). Such strategies were used to determine differences or similarities in the data collected in several ways.

First the different vantages points, perspectives and observations gathered helped identify what was 'common' to the range of methods. Using multiple sources to look at issues from a variety of perspectives helped the process of reducing bias and increasing objectivity. In addition the quantitative data collected during both case studies was supported through the use of pilots and through statistical procedures undertaken. These are described in Sections 3.12, 3.17, 3.29 and 3.34 respectively. Second, according to Melia (1997:33), a 'credible interpretation' is achieved when a researcher 'translates data from the field into an explanation of the topic in hand which can be conveyed to others and understood by others'. In order to increase the reliability and interpretation of the data, independent coding was undertaken assisted by discussion with a colleague/fellow researcher based at the MMS at the time of the study. In the context of Melia's views, such discussions were a valuable approach to adopt, and indeed one that prompted me to think deeper about the likely causes of the explanations and meanings that I had derived from my data. Third, the qualitative data gathered from the semi-structured interviews and focus groups held with students helped explore a broad range of questions. Volunteers within the samples were recruited from the different educational settings (four Teaching Hospital sites) within the specific educational community of this research.

This was supported by common themes being recorded and identified as similar, and helped to decrease bias of the data collected. The reliability of this analysis was facilitated further by consistently re-coding data in the same way over a specific period of time. Similarly, categories were defined to measure accurately concepts throughout analysis of the online discussions, and reproducibility of specific categories then helped to build more concrete findings. According to Neuman (2003), such sampling allows the measure of variables on smaller sets of cases to generalise results more accurately to the larger case. Discussions with the same colleague/fellow researcher helped confirm the categories within the devised data coding framework.

Cresswell (2007) suggests incorporating eight strategies for validity in mixed methods research studies and advises that at least two of these should be included in any study. Such strategies are engagement and observation in the field; peer review or debriefing; triangulation; refining hypothesis; clarifying researcher bias; including participants views of the credibility of the findings; rich and thick description and external audits. Taking Cresswell's strategies into account, Table 3 shows how I endeavoured to include six of these strategies into the research design of this study.

Validation Strategies	Adoption of Strategies in Thesis
1. Triangulation	Quantitative/qualitative methods used in different phases such as gaining different vantage points, perspectives and observations through multiple sources (Case Study 1 and 2)
2. Peer review or debriefing	Supervision from Director of Studies and supervisor at MMU. Reflective dialogue with fellow colleagues at UoM and transparency with line manager (Case Study 1 and 2)
3. Refining hypothesis	Pilots conducted of questionnaire, interviews and analysis of online discussions. Ongoing continuous reflection. Engaged in systematic search for explanations and interpretations of the findings (Case Study 1 and 2)
4. Solicit participant views	Annual feedback from MMU Student Conferences and peer audiences at UoM. Verification of accurate records of interviews/focus group transcripts by participants. Transparency with participants at all stages of research (Case Study 1 and 2)
5. Rich and thick description	Iterative approach used between each interview/focus group for data collection and use of thematic coding and constant comparison to test credibility of analysis. Adaptation of grounded theory approach (Case Study 1)
6. External audits	Presentations to external audiences at medical education research conferences in Maastricht, Prague, London and Newcastle (2007 and 2008) and second author on peer reviewed paper published in Medical Teacher (Braidman et al. 2008) (Case Study 2)

Table 3: Validation Strategies Adopted Throughout Thesis

3.8 Ethical Considerations

Useful advice is offered by Cohen et al. (2007) regarding ethical considerations in the design of a research study. Taking their advice into account, prior to commencing this research my proposal was discussed with the Academic Lead for Portfolio at MMS. Permission for the research was agreed and ethical clearance from the Local Research Ethics Committee (LREC) at the University of Manchester was then sought, ensuring that ethical procedures were carefully followed throughout.

In seeking to respect the autonomy of the student participants in this study, details concerning the purpose and scope of the research were distributed to each participant. Opportunities were given to discuss any issues and students were free to consider their decision about involvement in the research before and during all data collection stages (and indeed at any stage of the research). The same facilities were offered throughout this study to all students, including information, support and other opportunities. All that was possible to minimise undue challenges for students, particularly whilst being interviewed, was undertaken to avoid at all costs any embarrassment, stress, loss of self-esteem or personal dignity.

Kvale and Flick (2007) equally observe that researchers can sometimes bring turbulence to a project if at the centre of the research, making the process problematic and demanding multiple negotiations, political and micro-political. To avoid this, I was transparent at all times with student participants and the Academic Lead for Portfolio at MMS throughout the research. Students were informed that participating in the study would not in any way affect their progression on the medical degree programme and an Information Sheet and Consent Form was distributed and signed by all participants to confirm their understanding. Within my remit as Lecturer, I also produced a certificate of contribution to the research for students to include in their portfolios. The Participant Information Sheet and Consent Form distributed to students can be seen in Appendix B.

With regard to confidentiality, all information offered by student participants was safeguarded taking into account relevant legislation such as the Data Protection Act 1988 as recommended by Beauchamp and Childress (2001) and was in accordance with the Ethics approval procedure for projects and Data Protection Guidance at the University of Manchester at: http://documents.manchester.ac.uk/display.aspz?DOCID=7689. Participants' anonymity was maintained at all times by ensuring that all identifying information was removed from recordings, transcriptions, online discussions and other forms of data, including individual and collective summaries participants had provided. All paper documentation was secured in a locked storage cabinet and shredded when no longer required. Throughout the study all electronic documentation was stored on a University of Manchester personal computer that was encrypted and electronically protected on a daily basis.

Table 4 illustrates the study's research aims and the various methods adopted in order to address these aims.

Research Aim	Methods Used Throughout Thesis
1. What do undergraduate medical students perceive as an effective Student Peer Facilitator for online discussion activities?	Questionnaires Interviews Focus groups (pre-amended training)
2. What are the benefits and challenges of using Student Peer Facilitators in online discussions as observed by undergraduate medical students?	Questionnaires Interviews Focus groups (pre-amended training)
3. What impact does amending the training for Student Peer Facilitators to include e-moderating skills have on the cognitive development of online discussion amongst a community of learners?	Community of Inquiry Model (post-amended training)
4. Does the gender of students influence the nature of facilitation and interaction within an online discussion environment?	Devised Coding framework Comparison of contribution by gender (post-amended training)
5. What are the broader issues for educational practice in implementing Student Peer Facilitators in asynchronous online discussion groups?	Above and literature review (pre and post-amended training)

Table 4: Methods Used to Address Research Aims

In the following section the specific methodological approaches selected for Case Study 1 are now discussed.

3.9 Methodological Approaches: Case Study 1

During the first year of this research, Case Study 1 delved into perceptions gained from medical students on the use of Student Peer Facilitators for their online discussions activities *(*Research Aims 1 and 2*).* As discussed, the nature of the study's aims led to an interpretivist approach being the most dominant paradigm of the research, through the application of qualitative research methodologies. However, quantitative methodologies were also applied throughout aspects of this case study through questionnaire methods. Exploring perceptions can sometimes be problematic with purely quantitative data, and the qualitative data gathered from the interviews and focus groups helped gain a deeper insight into opinions and attitudes of the student participants. Such methodologies emphasised the interaction between the social actors being researched (i.e. medical student participants) and me (i.e. the researcher) and allowed the contextual factors of the research environment to be reflected.

3.10 Component 1 - Questionnaire Methods

A questionnaire was developed in the exploratory stage of this case study, to obtain information from students regarding the milieu of the study. Within medical education research, questionnaires are used extensively to evaluate the delivery of educational programmes, for researching technical and clinical aspects of medicine, and educational and curriculum evaluations (McKenna et al. 2006; Mann et al. 2009). Many authors consider them to be versatile in gathering valid, reliable, unbiased information from a representative sample of respondents (Robson, 2002). Although questionnaires are not generally used in qualitative research studies, as responses are not thought to be 'naturally occurring', they are considered a useful means of collecting information from a broader sample than can be reached through interview methodology. They are also considered a useful confirmation tool to provide corroboration and supporting evidence (Bloomberg and Volpe, 2008).

3.11 Sampling Strategy and Generalisability

Questionnaire methods effectively reached the large student population of this study in an efficient manner and were disseminated in a paper-based format to students in the Year Three cohort of 2007 (*n*=473) at all four Teaching Hospital sites. Typically this was at the beginning or end of a teaching event. Students were given time to complete the questionnaires and they were either returned immediately or sent electronically by email at a more convenient time to students. Adopting this approach not only enabled the questionnaire to be simultaneously administered to large groups of students, but helped maximise the return of responses with minimal inconvenience to students (Gamliel and Davidovitz, 2005; Osborne and Blanchard, 2011). Distribution of the questionnaire in this way helped achieve responses from 286 students, giving a 60% response rate. Such rates are considered to be reasonable and adequate and meet with Comrey and Lee's (1992) guide to sample measures of 200 responses as 'Fair' and 300 as 'Good'. Other authors also suggest over 50% is an acceptable response rate in social research studies (Richardson, 2005).

3.12 The Questionnaire Process

Previous studies note that appropriate questionnaire design is essential in ensuring valid information is collected from participants (Leung, 2001). Response rates in questionnaires are noted to increase if issues covered are relevant to participants and bias may be reduced if careful attention is given to the question order and response categories (McColl et al. 2001). As a pre-existing questionnaire was not found to be appropriate for addressing the specific concepts explored at this stage of the research, a questionnaire was therefore specifically developed.

A pilot questionnaire was conducted on a convenience sample of students (*n*=6) based at Teaching Hospital C. Whilst students selected for the pilot were broadly representative of the rest of the student population, it is recognised that researcher's bias may have occurred here when selecting

these participants. However, the chosen sample was aimed at reflecting the characteristics of the student population in terms of age, sex and ethnic mix of third year medical students from which it was drawn, and provided a good source of data to gain insight into the issues being explored.

The pilot study was undertaken two weeks prior to the wider distribution to ascertain any difficulties students may encounter in completing the questionnaire. Before the pilot work an important step in developing the questionnaire to help content validity, was taken involving referring back to the literature. Given that the research identified a number of important themes related to online peer facilitated discussion, three key concepts were therefore included: the role of a facilitator; engagement and participation; and the influence of the learning environment on discussion. Each question was linked to an idea or concept which corresponded to the research aims of the study. Subjects, or a particular aspect of a subject, were then grouped together in a logical order to avoid students shifting from one topic to another.

Students were asked to select statements measuring the three concepts using the commonly used psychometric Likert-type answer scale. Likert scales were used as they can often appear interesting to respondents and calculation of mean scores for the given responses can later be easily achieved. The scale was anchored at one end by a response of ‘strongly agree’ for the most favourable attitude towards the question to ‘strongly disagree’ at the other. Using closed questions have been noted to be useful for obtaining attitudes and opinions from respondents and involve minimal effort on the part of the respondent (Robson, 2002). However, by incorporating a free text box students were able to elaborate on the reasons behind their responses to the statements listed. Although the data was not presented anonymously on the questionnaires, no other person was aware of the respondents’ identity other than the researcher.

3.13 Data Collection and Analytical Approach

During this stage the coding scheme and data entry processes were piloted and a matrix listing the research questions was constructed. This helped to indicate the extent of how the questions covered the research aims, and helped towards establishing reliability and validity of the questionnaire before being administered extensively. After the pilot run, minor amendments were implemented in light of comments received by students to Statements 1 and 6. The final questionnaire was discussed further with my doctoral supervisor and was then distributed to student participants in the whole Year 3 cohort.

A simple grid was prepared to collate the raw data along with a coding system to evaluate responses based on a numerical scale code of 5 = strongly agree and 1 = strongly disagree and a small set of broad categories. This data was imported first into Excel files and second into SPSS (Statistical Package for Social Scientists) files for data analysis (version 16.0). Two different software packages were used as Excel software was able to automatically update graphs as the questionnaire data was entered. For the closed questions responses were entered manually and coded by allocated numbers. Each response was recorded in a data sheet and numbers were linked to variables listed in the Excel spread sheets.

For the free text box responses, categories were devised based on major themes and concepts that were evident in the student responses. These were recorded and coded on Excel spread sheets in a different way to the closed questions. First this was done through reading the responses, identifying the emerging themes and then highlighting them as suggested by Denzin and Lincoln (2003). Second, comments were then labelled with one or several categories which were later compared for common themes and an extra column added for these categories on the spread sheet. All questionnaires were anonymised and assigned a reference number as early as possible with data stored against this number rather than the names of respondents. Completed questionnaires were then ultimately checked for missing data.

Appendix C shows the final questionnaire and structure of the coding grid used for collating the questionnaire data.

3.14 Some Limitations to Consider

Using a questionnaire approach for this element of the study provided an opportunity for students to express their opinions and give feedback in an efficient and resourceful way. Benefits included the ability to test for reliability and validity, offering different choices to responses, and the inclusion of a 'Comments' section for students to make remarks on issues that were relevant to them (Bowling, 2002).

Nonetheless, there were some limitations in using this approach. First, the balance of choices within the rating scales to allow expression of opinions on the concepts being examined was sometimes difficult. Second, was the 'lack of control' in terms of the order in which students answered the questions and the inability to repeat questions or clarify responses. Similar issues such as the obvious shortage of verbal clues, the potential loss of meanings, and the validity of relying on respondents' honesty have been highlighted in other studies as a potential to lead to misleading conclusions (Bowling, 2002; Denscombe, 2007). Confidence in findings is dependent on the quality of the individual responses, and scepticism is sometimes expressed concerning the real meaning behind questionnaire responses (Bryman, 2008). Third, due to the complex timetabling format that third year medical students followed and the large population involved this study, it was not possible to repeat the questionnaire during the period of this research. Another lesser restriction was collecting extraneous information such as wider issues related to the medical curriculum. Previous studies note this can be a common occurrence when collecting data from participants in a research study (Oppenheim, 1992; Solomon, 2001).

The complexities and dynamics in the social context of this research were difficult to achieve from the application of a purely quantitative methodology, as the students and their interactions were not convincingly reducible to

homogenised categories. Indeed, a criticism of Likert scales is that they measure subjective feelings which may change depending when a respondent completes a questionnaire (Cohen et al. 2007). Based on resolving some of these limitations and a desire to probe more objectively into students' perceptions, questionnaires were therefore supplemented with qualitative interviews which were purposefully designed to extend the emergent theory that was arising from the questionnaire data.

3.15 Component 2 - Qualitative Interview Methods

The second aim of this study was to investigate the benefits and challenges of using Student Peer Facilitators for online discussion as perceived by students in this study. In order to achieve this, qualitative interview methods were used, specifically to obtain a deeper understanding of events within the research environment (Robson, 2002; Silverman, 2005; Kvale and Flick, 2007). In this context, an interview consisted of an individual student responding to open-ended, probing questions from a common core of questions followed by subsidiary questions. It is recognised that whilst questionnaires can permit more variables at one time to be studied, they can also be poor in providing detailed insights into the phenomena being examined because a limited amount of information is gained without explanation. In this sense the interviews helped to extend and crystallise the themes that had emerged from the questionnaire data and provided a further source to compare student views. Furthermore, conducting interviews based on issues arising from the previously administered questionnaires, allowed for qualitative checks of the quantitative data that had been collected and was thus useful in constructing triangulated data (Bell, 1999; Schostak, 2006).

3.16 Sampling Strategy and Generalisability

Two steps were taken to invite students to participate in the interview process, resulting in volunteer sampling methods. First, an electronic

announcement for third year volunteers was posted on the medical school intranet (Medlea), and second an email was sent to the whole third year cohort providing information.

In order to include a range of views a minimum quota of five students and a maximum of ten at each of the Teaching Hospital sites were aimed for. Twenty nine students agreed to take part in the interviews, and two later declined due to personal reasons. The remaining twenty seven students were interviewed on a one-one basis. The overall sample of student volunteers was inclusive of gender, age, Facilitators, non-Facilitators and undergraduate or post-graduate level. The gender ratio was 11:16 male: female volunteers. Table 5 illustrates the spread of student volunteers who were interviewed across the four Teaching Hospital sites.

University Teaching Site	No. of Volunteers	Gender
Hospital A	7	4M, 3F
Hospital B	6	1M, 5F
Hospital C	5	2M, 3F
Hospital D	9	4M, 5F

Table 5: Breakdown of Volunteer Student Participants for Interviews

3.17 The Interview Process

Cohen et al. (2007) advise that pilot interviews can add rigour to the structure of interviews. In order to ascertain any potential difficulties for students and me as the researcher and interviewer, the format of the interviews was piloted with three students based at Teaching Hospital site C. Throughout the pilot and the subsequent interviews a general guide was followed to ensure the same line of inquiry was followed with each student, with a set of prepared questions and prompts. Kvale and Flick (2007) reiterate that qualitative interviews should include a combination of a series of themes to

be discussed, as well as a set of structured, pre-prepared questions. In this instance students were asked to describe their experience and the perceived benefits and challenges of having the online discussions facilitated by their peers. The starting point for each interview was to ask students the question 'What was your impression of the Student Peer Facilitator scheme?' Broader topics were then narrowed down to areas of interest and concern as an understanding of what students viewed as being important was gained. The topic guide and interview structure followed is illustrated in Appendix C.

From an interpretivist viewpoint, student participants were involved in actively constructing their social world and generating data in order to provide insight into their perceptions and experiences (Silverman, 2005). Probing during the interview process allowed student's underlying perceptions to be investigated in a way that the questionnaires did not. Although being able to pick up on non-verbal cues throughout the interview was beneficial, I was mindful of this being something Robson (2002) suggests can alter, or in extreme cases reverse, the answers respondents give. In contrast to the questionnaire approach however, the opportunity for clarification of meanings from students was instantaneous. Having such flexibility has previously been noted to be useful when writing up ideas and thoughts and reflections at a later stage (Schostak and Barbour, 2005). Allowing the question wording order to be altered where appropriate and explanations given when certain questions appeared unclear was useful. Where applicable, this allowed student responses to be followed up or expanded upon. During the interviews students were encouraged to reflect on their perceptions and were given the opportunity to air their opinions on an individual and supportive basis. Understanding the themes that were prevalent, but not always salient, helped towards increasing awareness of the constructs that students wanted to focus on and develop further (Robson, 2002).

3.18 Data Collection and Analytical Approach

All interviews with students lasted between sixty and ninety minutes in length and field notes were taken throughout. Interviews were digitally recorded

and verbatim transcription of interviews captured a full record of student's contribution along with the input of me as the researcher/interviewer. In order to acquire more proximity to the data, all interview transcripts were personally transcribed within five days of the interviews taking place. This, as highlighted by Krueger and Casey (2000), is an important part of analysis when summarising interview or focus group content. Familiarity with the data and observing what is actually there, rather than having expectations of the data, is thought to facilitate ideas to emerge from the analysis better (Mays and Pope, 2000). To help confirm accuracy, each participant was then sent a transcript of their interview in order to make corrections or deletions where necessary. However, no comments were deleted or corrected by any of the student participants.

A modified approach of grounded theory was then embraced for analysis of the interview transcripts. Such approaches are commonly associated with qualitative methods and are recommended for exploring social relationships and behaviour of groups (Charmaz; 2006; Cresswell, 2007). Some of the characteristics of grounded theory focus on everyday life; gaining participant's perspectives and inquiry as an interactive process between the researcher and the participants. The decision to use grounded theory was supported by the lack of existing theory regarding the use of Student Peer Facilitators for online asynchronous discussion in a medical education context. Grounded theory literature often states the need for a researcher to have no preconceived ideas or frameworks in mind when conducting research. Yet all theory is grounded in data to a certain extent, something Glaser and Strauss (1967) aim to point out. It was therefore sometimes difficult to ignore views and influences when looking at the data from different lenses (Schostak, 2006).

In the first instance AtlasTi coding software was used for examining the transcripts. However, this was found to be challenging in that there was an unrestricted number of codes that could be created and the process often became overwhelming and inconsistent. The interview transcripts were therefore coded manually employing Strauss and Corbin's (1998) suggested

coding system to seek emerging themes in the content of the interviews. Elements of the data were reviewed and re-reviewed in order to decide what coding fitted the concepts suggested in the data. Each code was constantly compared to all other codes to identify similarities, differences and general patterns. Utilising such an approach helped informative insights derived from the interview transcripts to be captured (Strauss and Corbin, 1998).

As part of this analysis, several steps were taken to structure and analyse the data. First, during the process of transcribing and re-reading of transcripts, I familiarised myself with the data and read the interview transcripts several times. This was the first level of coding data relevant to the research questions. Throughout this stage Microsoft Word text highlighting feature was employed to emphasise key words, terms and phrases. In this respect a unit of analysis was distinguished by thematic associations or themes, which either emerged from the raw data or was established in the literature review.

The second stage of analysis was performed through engaging in a form of reduction as proposed by Glaser (1992). Glaser suggests asking key questions during this stage such as what the data represents, what categories the data indicates and furthermore what is actually happening in the data. Throughout this stage the coding of categories was recorded on a coding sheet. This assisted in the process of saturation of information emerging and presented an illustration of issues students perceived significant. Despite this process however, some categories were too broad and further analysis of the material was required. This proved to be an insightful process into how these categories compared to the original research aims of the study and whether any ‘new’ concepts were emerging from the data. Appendix C shows an example of the coding structure used for data collected during the interviews.

The third stage involved drawing a tentative thematic framework, taking into account the themes that had emerged from previous data analysed. This was developed after four transcripts. The process of making the data manageable was continuous, and included looking for inconsistencies or contradictions in

the transcripts and coding categories that were recorded. Using constant comparative methods to analyse the transcripts required many revisions, modifications and amendments until the data was positioned in appropriate categories (Glaser and Strauss, 1967). An iterative approach continued throughout analysis of all the interview transcripts with extended coding checked against the sub-coding chart that was generated. Ultimately this enabled salient themes to be picked out and led to, what Wolcott (1990:47) refers to as a 'homing in' or 'tightening up' of the data that I then chose to focus upon.

For the final stage, as part of the grounded theory process, the research literature was used as 'data' and was constantly compared with categories that were integrated into the emerging theory (Glaser, 1992). In the intermediate steps between coding and sampling, analytical 'memo' writing was also undertaken which eventually became part of my audit trail. These memos, based on intuition, notions and the literature, were found to be extremely valuable to return to and were revisited as my thinking changed and the conceptual model of the study developed.

3.19 Some Limitations to Consider

Conducting qualitative interviews with student participants provided an opportunity to gain a better understanding of their perceptions and what issues they considered to be significant in using peer facilitators for their online discussion activities (Robson, 2002). Using open-ended questions and prompts during the interviews allowed students the opportunity to react in their own words, as opposed to responding to the fixed answers that were set in the questionnaire.

However, although the interviews were a useful tool for gaining a deeper insight into student's perceptions, they were as pointed out by Robson (2002), not unproblematic. First, the high number of interviews conducted meant that a vast amount of data was generated, and thus needed to be transcribed and analysed. As noted by several authors, this can be a very

time consuming activity to undertake, particularly if geographical considerations apply, as did within this study (Mays and Pope 2000). Verbatim transcription of one individual interview took approximately three hours to transcribe and four hours to undertake analysis. As Wolcott (1990: 48) notes, researchers can very easily become ‘swamped in their data’ at this point, and indeed this was something I experienced. The flip side to this however was that the viewpoints from twenty seven students helped to improve the reliability of findings and the seeking of common themes, and thus helped towards ensuring validity of the findings for this study.

Second, it is recognised that with volunteer sampling, volunteers may have a range of motives for volunteering and it is therefore difficult to make claims for generalisabilty within the wider population, as noted by Morrison (2009). It is possible that some of the student volunteers may have possessed more altruistic or self-disclosing characteristics to those students who did not choose to be a volunteer. In addition, amongst the criticisms of qualitative research is researcher bias and the physical presence of the interviewer (Mays and Pope, 2000; Robson, 2002). My involvement as researcher and Tutor on the educational programme student volunteers followed may have affected my interviewing style, the use of leading questions or failure to follow cues. In attempting to overcome this however, the generation of themes were discussed with a colleague/fellow researcher at MMS. To further ensure validity students were also given a copy of the interview transcripts with an opportunity to provide feedback and clarify any points.

To expand upon these findings further, the third stage of the data collection was then undertaken. This involved employing group interaction as a methodology to strengthen the concepts that had emerged from the student interviews.

3.20 Component 3 - Nominal Group Technique Methods

For the final phase of this case study, Nominal Group Technique (NGT) methods as devised by Delbecq and Van de Ven (1971) were selected specifically using focus group discussion as a process. NGTs were purposely chosen, in contrast to alternative focus group methodologies, as they are considered to be effective in systematically collecting and organising the thoughts of groups (Potter et al. 2004). This, as Schostak (2006) suggests, is particularly effective in allowing a 'public space' for reflective discussion to take place and for small groups to explore a topic in detail. Providing such a space and allowing the freedom for students to participate with an equality of voice in this instance was an important aspect of the process. Furthermore such approaches are increasingly applied to adult educational programmes, and have been applied in medical educational research within MMS (Carroll, 2011).

3.21 Sampling Strategy and Generalisability

Similar to the recruiting process adopted for the interview volunteers, all third year students were invited to participate in a focus group setting through email invitation and an electronic announcement placed on the Medlea intranet. Twenty-two students volunteered which enabled one focus group to be organised at each of the four Teaching Hospital sites. Sub-groups with up to six participants were used in each of these groups, as used in other medical education research studies (Lancaster et al. 2002). Each focus group was homogenous with similar age, sex and mix of third year medical students on the MBChB medical programme at MMS at the time of this research. Table 6 shows the spread of student volunteers for the four focus groups.

University Teaching Site	No. of Volunteers	Gender
Hospital A	6	3M, 3F
Hospital B	6	3M, 3F
Hospital C	5	2M, 3F
Hospital D	5	2M, 3F

Table 6: Breakdown of Volunteer Student Participants for Focus Groups

3.22 The Nominal Group Technique Process

Although there are variants in using NGTs in focus group settings, usually the process reflects a standardised approach, with the length of time devoted to each stage being flexible. Routinely the process involves five separate stages, with Stage One identifying the issues surrounding the topic under discussion. Stage Two involves potential solutions to the issues outlined in Stage One. Stage Three asks participants to make decisions by a reduction of issues about which there is a consensus regarding the suggested solutions and Stage Four develops the changes required to initiate the solutions to the problems identified. In Stage Five, the final stage of the process, all the stages are combined to evaluate the changes and ensure co-operation within the group.

Within each session my role as facilitator was explained to students and the principles of discussion using NGTs methods, in that the discussion lay largely in their 'control'. Each session began with a general airing of students' views and experiences of being peer facilitated in the online discussions that had taken place throughout the academic year. On occasion discussions moved off to other subject areas that students considered to be important, but were related to the medical curriculum in general. In this instance facilitation techniques helped steer the group discussion back towards the purpose of the focus group and the topic being explored.

In line with Stage Two of the NGT process, students were given approximately ten minutes to generate ideas and individual thoughts on the use of the Student Peer Facilitators by listing three 'Likes', 'Dislikes' and 'Improvements' on post-it notes that were provided. At this point students did not confer with other members of the group. After the ten minute writing time, in line with the third stage of the NGT process, students shared ideas using a round-robin system, guided by facilitation. The post-it notes students had generated were placed on large flip chart sheets and displayed around the room where the focus groups took place. These sheets were reviewed (with no criticisms) by students in the groups and duplications were eliminated and summarised. This process was important as it ensured that each idea was given equal priority and moreover, that all ideas were recorded. A generic list of ideas from within the group was then collated to help clarify understanding of responses and allow opportunities for students to question or illuminate upon the ideas produced, as depicted in Stage Four of the NGT process.

In the fifth and final stage of the process students in each group then ranked, (in order of agreed priority), the ideas from the lists they had produced in Stage Three. Points were allocated for the ranking order of responses in order of importance. For example, those ranked in first positions were given maximum points (i.e. ranked 1 of 5 = 5 points). This identified those ideas that were highly rated and constituted the five most favoured group actions for dealing with the issues. The purpose of asking students to rank the information was to help stimulate discussion further (Stage Seven). Once the rankings were collated, a summary of the group discussion session and content provided further opportunity to raise questions or clarify points. Each of the focus groups followed the same structure and format and lasted approximately ninety minutes. The focus group structure and process is illustrated in Appendix C.

In the closing stage of each session, reassurance of anonymity was repeated to students concerning their involvement in these sessions. The diagram in Figure 5 show the design process used during the focus group sessions.

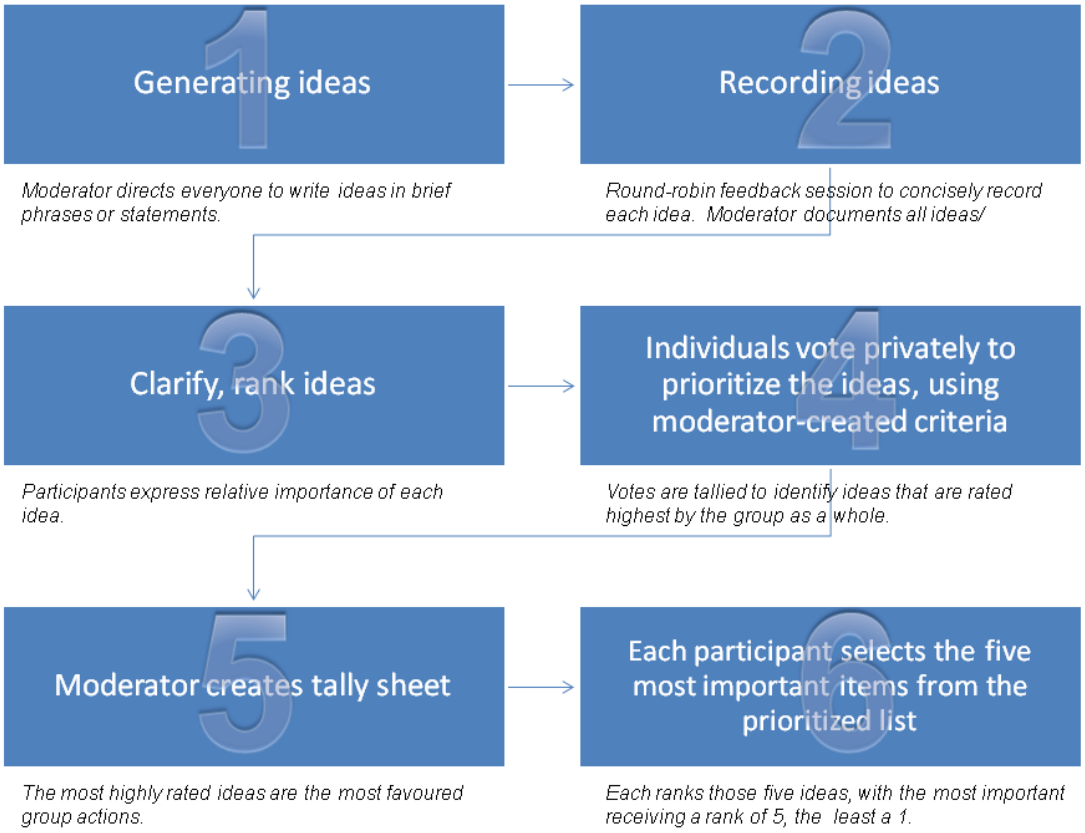

Figure 5: Stages of the NGT model as depicted by Delbecq and Van de Ven (1971)

3.23 Data Collection and Analytical Approach

The opportunity to think 'in silence' first, and prevent the discussion being controlled by more vocal members of the group was the underpinning rationale for using NGTs methods. Previous experience of conducting focus groups with medical students has highlighted this difficulty. Within each group session, NGTs weighted ranking methodologies enabled a number of issues to be prioritised and gave everyone an opportunity to voice their opinion. Students reflected individually and identified a group consensus through the later ranking of qualities perceived important by the group. After the focus groups had taken place all collected data collected was colour coded according to the categories and descriptors of the conceptual framework that was beginning to emerge. It has been suggested that three to five focus groups should be used to achieve data saturation (Morgan, 1997). Whilst saturation was achieved after analysis of three of the focus groups, the fourth group was still examined in order to help substantiate the themes that had

arisen. In the same way as the interview process, analysis of data gathered from the focus groups was based on an inductive, grounded theory approach (Glaser and Strauss, 1967; Patton, 2002). Frequency charts were developed and all coded data were checked against these charts. Figures were later tallied and the sum of scores was then aggregated on a single coding chart. All focus group sessions were digitally recorded and, as with the interview transcripts, recordings were personally transcribed verbatim within a five day period. Appendix C shows the coding chart that was developed for this stage of the process.

3.24 Some Limitations to Consider

The NGT approach provided a versatile, exploratory method for exploring students' perceptions in a group discussion environment. It was time efficient in terms of the data collection and exploring attitudes and views from within the student groups. In contrast to other focus group methods, NGTs minimised differences amongst the groups and provided relatively equal participation when discussing a particular issue. In traditional focus group methods sometimes opinions can be swayed by others in the group, and relationships outside the group can influence response patterns within the group. This is an aspect previously noted to increase responsibility and engagement in a task, foster feelings of accomplishment, and provide greater satisfaction of the ideas that are generated (Delbecq and Van de Ven, 1971). However, NGTs helped avoid dominance by members of the groups and allowed everyone the opportunity to contribute without distraction or criticisms from others within the group (Kitzinger, 1995).

Despite the benefits however there was a lack of flexibility found in employing these methods. For example, the typical sharing of ideas used in other focus group methods did not take place as previously noted (Paulus and Yang, 2000). Whilst a greater number of ideas were produced than in traditional focus group methods, discussion was sometimes minimised and did not always allow the full development of ideas. Dealing with more than one issue students raised at a time was sometimes problematic and the spontaneous

generation of ideas from within the group sometimes became ‘lost’ in the process. It may be that for some participants the process was therefore less stimulating.

Other limitations included a lack of anonymity amongst participants during the discussions where the principle of equality was potentially broken. This was apparent when students within a group were perceived to be of a ‘higher status’ than others (i.e. a Student Peer Facilitator). Although the sessions only included peer students, the presence of a Student Peer Facilitator in some of the focus groups may have influenced the dynamics of the groups. However, as the focus groups were conducted at each of the Teaching Hospital sites, this was difficult to overcome without mixing the sites. In purely practical terms, the sessions were problematic to organise because of the timetables that third year medical students followed at the time of this study.

Collectively the different methods used throughout Case Study 1 helped gain insights into students’ perceptions of using Student Peer Facilitators for the purpose of reflective online group discussion. The flow diagram illustrated in Figure 6 summarises how each of these processes were followed throughout this part of the research.

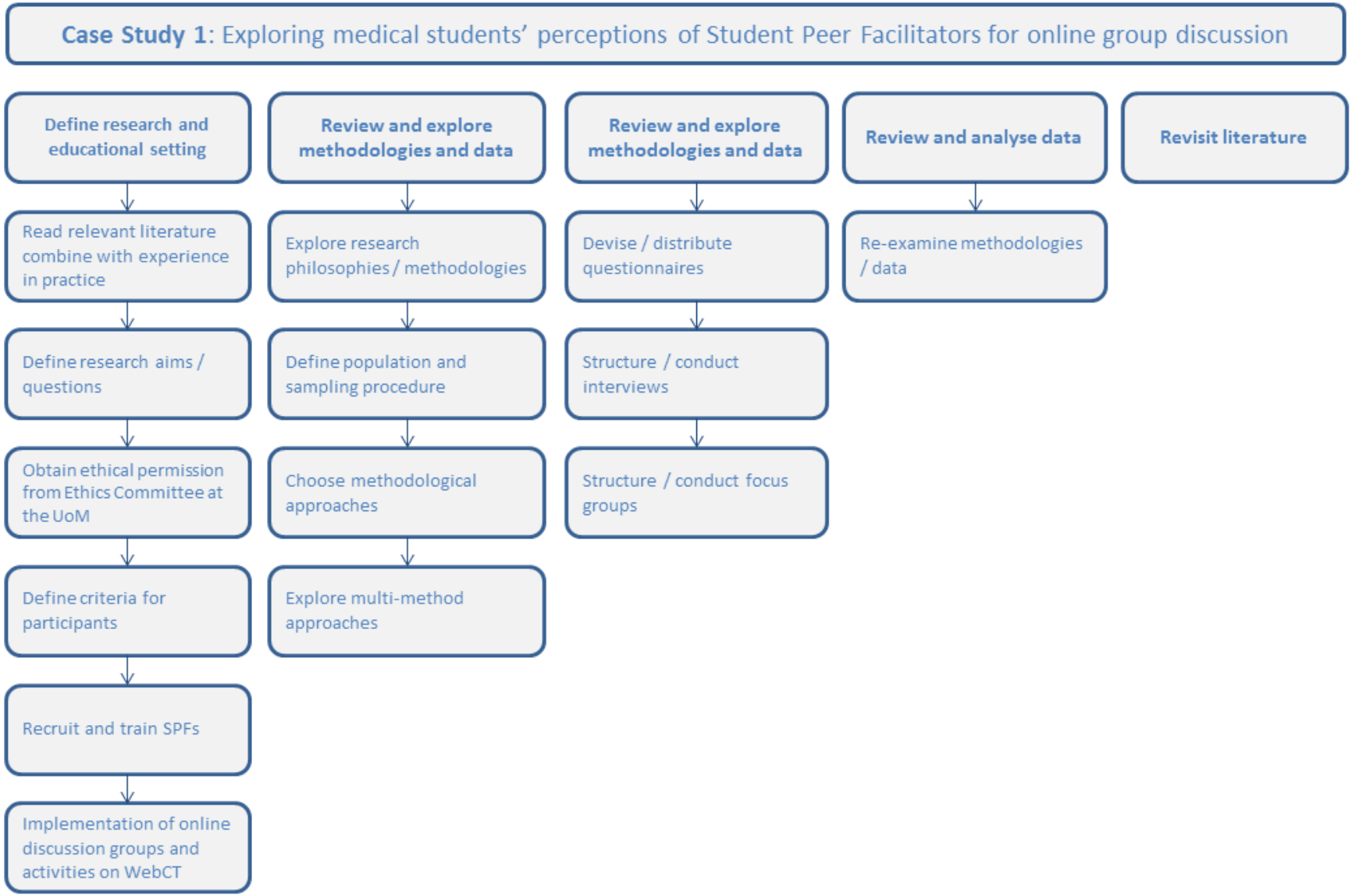

Figure 6: Research Design Processes Adopted - Case Study 1

3.25 Methodological Approaches: Case Study 2

In the second year of the research, Case Study 2 focused on the impact of introducing e-moderating skills into the training of the Student Peer Facilitators for the online discussions that took place amongst a sample number of student groups (Research Aims 3 and 4). The Community of Inquiry model, an existing framework validated in previous studies, was used for these specific investigations (Garrison and Anderson, 2003; Shea et al, 2006). In addition to the Community of Inquiry model a quantitative data coding framework was specifically developed to investigate relationships and interaction amongst a sample of student groups, before and after the amended training had taken place. Broader issues for educational practice in implementing Student Peer Facilitators for reflective online discussions were addressed as a recurrent theme throughout both case studies and were specifically addressed within Chapter 6 (Research Aim 5). The methodologies used within each of the two case studies are revisited within Section 3.9 and 3.25.

3.26 Component 1 - The Community of Inquiry Model

The Community of Inquiry model was used as the main framework for comparing online discussions from the first and second year of the study. As discussed in Chapter 2, the model focuses on the development of online learning communities in a Higher Education context and emphasises the process of instructional conversations and cognitive elements of online learning that are likely to lead to engagement and interaction (Garrison et al. 2000). Garrison and colleagues propose that in order for a group of learners to develop into a community of reflective learners (whether through the modality of face-to-face or online communication); three key elements must be present, namely Cognitive, Social and Tutor presence. The philosophy of the model is largely grounded in the critical thinking literature, with prior influences based on Dewey's understanding of progressive education (Dewey, 1933). Intrinsic to the model is reflection and discourse; and

therefore fitted well with the underlying theme of this study. In line with other theoretical influences of the study, the Community of Inquiry model presents a collaborative constructivist view of online teaching and learning, based on learning constructed through communication and collaborative interaction with others (Garrison et al. 2003).

Although several analytical frameworks are available for examining online discussion, many are concerned with statistical data or counting frequency of postings. However, the Community of Inquiry model is different in that it specifically measures the interaction that takes place amongst students in the discussions and has been formerly reported as a valid and reliable instrument for assessing asynchronous discussion texts. Furthermore the model has become a prominent method of assessing interaction in educational environments and is extensively used to inform practice of online teaching and learning and lends itself to mixed modes of inquiry (Cleveland-Innes et al. 2007). During its wide use it has been noted to reveal insights that are not obvious from participation alone, and increase understanding by drawing inferences from communication and its meaning (Shea and Bidjerano, 2009a). In medical fields, other studies concerned with contributions to online discussions that have not used the Community of Inquiry approach have found it difficult to establish a consistent means of analysing online text material (Buelens et al. 2007).

3.27 Sampling Strategy and Generalisability

Sample online discussion groups from within both years of the study were selected and compared in the following ways. First, a third of the group discussion texts were randomly selected from a total of sixty three (n=20). These samples comprised of groups from each of the four Teaching Hospital sites where students were educationally based. Discussion groups were selected using systematic sampling methods by the following process:

- Population (63) ÷ sample size per year (20)
- A starting point for analysis of the groups was required.
- Population (63) was then divided by (20) = 3.125.
- From this every 3rd group was selected after 3 for text analysis

Second, all students within these groups were contacted by email and were asked to confirm permission for their contributions to be analysed for the purposes of the research as described earlier. Table 7 shows the Teaching Hospital sites and the number of student groups that were randomly selected. Hospital A had smaller student numbers allocated at the time of this research and the sample within this hospital was therefore smaller. Hospitals B, C, and D however were similar in size and there was little variation in the number of students allocated to these hospitals. Although the student allocation differed slightly, sample groups comprised of approximately one third of the total number of the student groups at each of the hospital sites.

University Teaching Site	Total No. of Groups Per Site	Sample Groups Selected
Hospital A	10	3,6,9
Hospital B	18	12,15,18,21,24,27
Hospital C	17	48, 51, 54, 57, 60
Hospital D	18	30, 33, 36, 39, 42, 45

Table 7: Selection of Student Discussion Groups for Community of Inquiry Coding

3.28 The Community of Inquiry Process

Garrison and colleagues propose that the educational experience of learners can be enhanced when the three presences described in their model (cognitive, social and teaching) overlap and a ‘community of inquiry’ is formed wherein learners engage in critical thinking (Garrison et al. 2000).

Each of these presences is represented by several categories, which can be identified in participants' contributions to discussion by the usage of several key phrases. The Cognitive elements of the model are conceptualised as an 'issue' or 'problem' and the highest level 'critical assessment' as solutions to these problems. The Social presence elements, each of which are equal value, represent ease of expressing emotional responses, openness of communication and collaboration between participants in the group discussions. For the Teacher presence, elements range from establishing the underlying structures for the group discussion, to facilitating group discourses at the highest level. Figure 7 illustrates the different presences of the Community of Inquiry model and shows how they are represented and overlap within the concept of a learning experience.

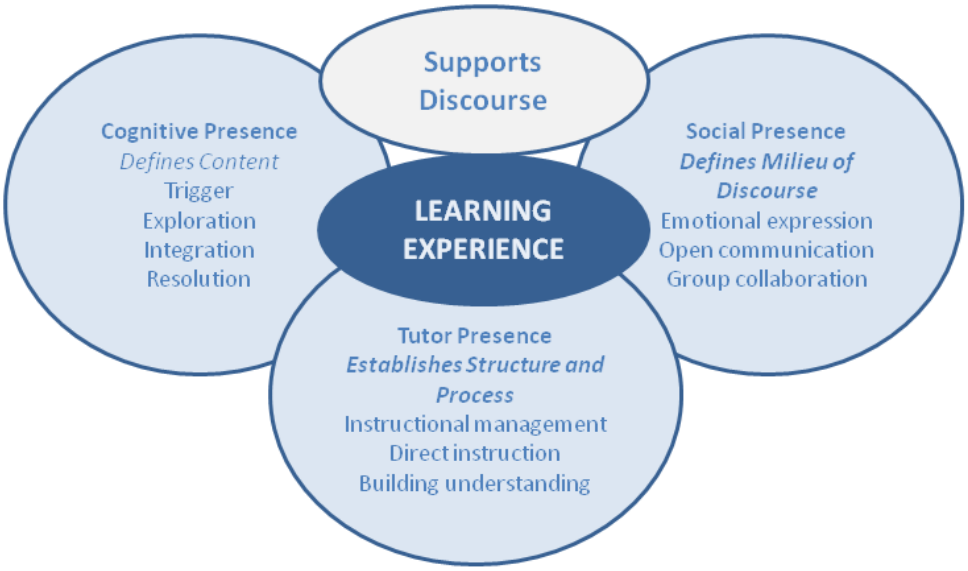

Figure 7: Community of Inquiry Model (Garrison et al. 2000: 28)

Each of the three presences in the model are defined by the categories which in turn are illustrated by suggested indicators. Examples of the type of categories and indicators within the model are illustrated in detail in Table 8.

Elements	Categories	Indicators (examples)
Cognitive Presence	Triggering Event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Apply new ideas
Social Presence	Emotional	Expression Emoticons
	Open Communication	Risk-free expression
	Group Cohesion	Encouraging collaboration
Teaching Presence	Instructional Management	Defining and initiating discussion topics
	Building Understanding	Sharing personal meaning
	Direct Instruction	Focusing discussion

Table 8: Elements of the Community of Inquiry model (Garrison et al. 2000:4)

For each message the model suggests that coders make three decisions based on the key elements of the model. First, each of these indicators is assigned a specific code and identified by the use of key phrases in the text, designated by the model, and the meaning conveyed by the student's contribution to the discussion. When coding, the Cognitive Presence has four components, namely triggering (CTE), exploration (CE), integration (CI) and resolution (CR). These are hierarchical with CTE at the lowest level, and CR at the highest. Only one of these can be allocated to each unit of analysis. Second, Social Presence comprises of three components which are non-hierarchical and more than one can be assigned to discussion texts. These consist of emotional expression (SEE), open communication (SOC) and group collaboration (SGC), which are non-hierarchical and more than one can be allocated to each discussion text.

The third presence, Teacher Presence also has three components and, as with Cognitive Presence, only one is allocated to each of the text contributions. Third the three categories of Teacher Presence include instructional management (TIM), direct instruction (TDI) and building discourses and understanding (TBU) with TIM at the lowest level and TBU at the highest. As suggested by the model, when it is not clear which phase is reflected coders are encouraged to code down (i.e. to the earlier phase) and code up (i.e. to the later phase) when there is clear evidence of a phase present. In analysing the discussions, a template based on the Community of Inquiry model was completed after each message posting which included exploring the three major components of the model: Cognitive Presence, Social Presence and Tutor Presence. Table 9 shows the typical format of a coded Community of Inquiry template for the following posted message.

Agent: S Target: GSF Gender: Male

Message No: 196

Date: December 7, 2007 5.46pm Subject: RE: Professionalism

‘I think most of us have experienced conflict with ward staff and sometimes even senior doctors **[SGC].** Unfortunately, I also think that we cannot escape it due to the nature of healthcare and the “hierarchy" mentioned previously. We are limited somewhat due to our experience and our knowledge **[SOC,SGC].** However, this should not be an excuse for others to disregard us as “just another typical annoying medical student” **[SEE]**

This brings me onto X's fourth question. I think it is within our duty to practice professionalism from the moment we entered medical school. **[CI,TBU]** It is assumed that we understand what professionalism entails, yet we find it so difficult to define it ourselves **[SEE].** An old BMJ article entitled "Professionalism must be taught" (http://www.bmj.com/cgi/content/full/315/7123/1674) makes for an interesting read. It stresses that "Professional status is not an inherent right, but is granted by society”.**[TIM, TBU]**

We have discussed whether or not we have encountered breaches in professionalism by qualified healthcare workers, but has anyone experienced anything from medical students??**’[SGC]**

Elements	Categories	CatCode	Instances
Cognitive Presence in posting Yes/No	Triggering event Exploration Integration Resolution	CTE CE CI CR	 √
Social Presence in posting Yes/No	Emotional expression Open communication Group cohesion	SEE SOC SGC	2 I 2
Teaching Presence in posting Yes/No	Instructional management Direct instruction Building discourse and understanding	TIM TDI TBU	I I I

Table 9: Example Message Coded with Community of Inquiry Template

3.29 Data Collection and Analytical Approach

At the end of both years in the study the text output from the sample online discussions selected were downloaded from the WebCT platform and copied into Microsoft Word format (*n*= 40). Meta-information such as dates, times and author of messages were downloaded and archived. All discussions were carefully checked for any reference to patients, students or Tutors. A number of different units for analysis of online discussion have been identified by researchers including a sentence, paragraph, thematic and message units. The most common use of responses of individual participants' messages was used as a unit of analysis in this study, ranging from one sentence to a paragraph in length. This analysis is based on a definition of 'a thematic unit' and is assessed in the form of a complete participant's response (Rourke and Anderson, 2002a). It took two weeks to become completely familiar with the concepts of the framework and learn how to accurately code the messages. A dry run of the analysis of messages

using the Community of Inquiry model was undertaken on two sample groups (Group 3 and 6, from Hospital A).

A total number of 1,491 in the first year of the study and 1,625 messages in the second were then analysed. The proportion of entries within the sample groups explored was fairly distributed between the Teaching Hospital sites, with the highest entries at Hospital C in the first year, and Hospital D in the second. A breakdown of the number of message entries for the sample groups at each of the Teaching Hospital sites can be seen in Figure 8.

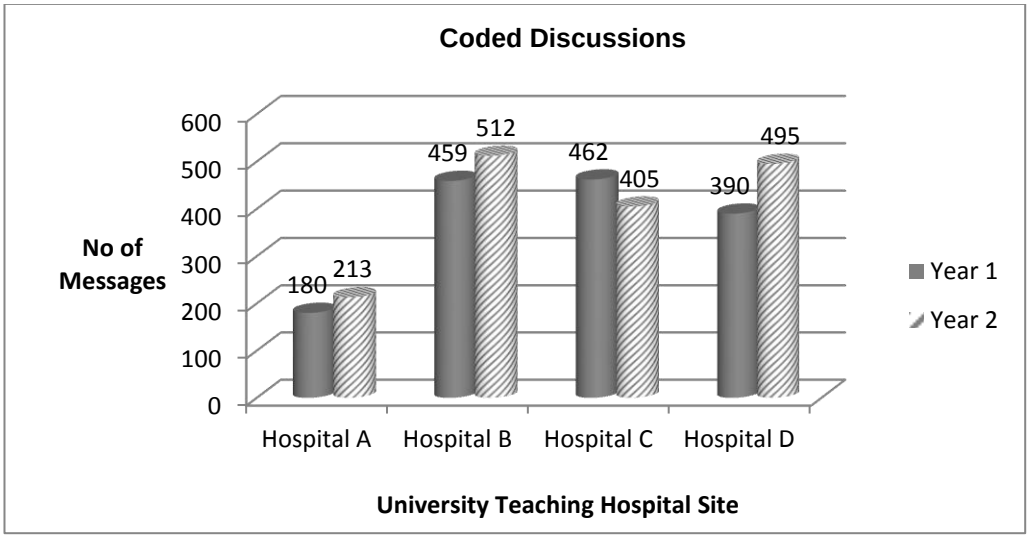

Figure 8: Summary of Coded Discussions at Teaching Hospital Sites

From each sample group the number of contributions was recorded on a chart and all discussion groups were coded from both years of the study. The proportion of all participants' contributions assigned to each category of Cognitive presence (CTE, CE, CI and CR) Social Presence (SEE, SOC and SGC) and Tutor presence (TIM, TDI and TBU) were then calculated and the data from each year of the study were compared. All messages were clearly demarcated in the transcripts so coding decisions could be reliably identified. All groups were coded by the researcher and to help endorse rigour of the coding, a sample of 5 groups from each hospital site (20) were selected and coded independently by a colleague/fellow researcher based within MMS at the time of this study. The statistical software package Stata, commonly used

in social science research fields, was used to record and analyse the level of agreement between coders, and was calculated using Cohen's Kappa (Weller and Romney, 1988). Table 10, Table 11 and Table 12 show details of the types of indicators and phrases within each of the presences used when coding the discussions. Appendix E shows the structure of the coding sheet developed to record the comparison of these results and illustrates an example of the process undertaken to code messages for the group discussions.

Community of Inquiry Components	Definitions of Categories	Code	Indicators and Key Phrases
Cognitive Presence (Only one code can be assigned to each text posting) There is a hierarchy of these components.	Triggering Event - initial conceptualising of a problem or issue (Lowest level)	CTE	Recognition of a problem, perhaps from experience, expressing puzzlement or unease, asking questions, requesting explanation e.g. “Professional behaviour in medical students… should we start by discussing what we interpret by this statement?”
	Exploration – searching to make sense of a problem	CE	Exchanging information, clarifying situations or terms, discussing ambiguities, searching for explanations; Characterised by exchanging information; e.g. “I think this is an interesting topic, but how can the Medical School know we are all responsible and sensible enough to be trusted?”
	Integration – connecting ideas and beginning to link concepts, moving towards providing explanations	CI	Integrating knowledge and thoughts into coherent explanations; testing possible insights into problems e.g. “On the other hand doctors and medical students are entitled to do with their free time as they wish. Stress is a factor in all health professions and if the behavioural responsibilities and demands of the clinical environment extend into the free time of NHS workers”.

Community of Inquiry Components	Definitions of Categories	Code	Indicators and Key Phrases
	Resolution – critically assessing solutions to problems (Highest level)	CR	Reflecting on the efficacy of solutions to dilemmas, exploring consensus, agreement and differences e.g. “Recording clear and accurate accounts of a patient’s history is vital to the treatment plan….other healthcare professionals…..depend on the notes, we all agree on that……..The healthcare professional, however, who took the history should have delved into prior falls the patient may have had... that is clearly relevant to the case”.

Table 10: The Community of Inquiry Model - Cognitive Presence (Garrison et al. 2000)

Community of Inquiry Components	Definitions of Categories	Code	Indicators and Key Phrases
Social Presence (There is no limit on the number of codes assigned to each text posting) There is no hierarchy in these components.	Emotional Expression (indicates feeling secure in the online environment)	SEE	Sharing and expression of feelings, both conventional and unconventional expression of emotion, humour, irony, and openness to self-disclose and indicate vulnerability e.g. “I was so angry… I could not understand him…….”
	Open Communication	SOC	Acknowledging others and their contributions, encouraging others, referring to their postings e.g. “In your last message you referred to…. I really liked your interpretation of that situation…”
	Group Collaboration	SGC	Encouraging group interchanges, focused interchanges, which also accept differences of opinion, indicated by addressing the group as “we”, referring to participants by name, using “our” e.g. “I think that John summarised our discussions very well”.

Table 11: The Community of Inquiry Model - Social Presence (Garrison et al. 2000)

Community of Inquiry Components	Definitions of Categories	Code	Indicators and Key Phrases
Tutor Presence (Only one code can be assigned to each text posting) There is a hierarchy of these components.	Instructional Management (Establishing underlying structures) (Lowest level)	TIM	Facilitating establishment of group organisation and guidelines, facilitating choice of topics, establishing ground rules and netiquette e.g. “In our initial face to face meeting we decided to deal with…” “We must finish this discussion by Friday…”
	Direct Instruction (Pacing the discussion, Confirming that the group understands, responding to technical concerns)	TDI	Recognising when the group has reached a “dead end” and move them on, referring to other outside knowledge and references to keep the discussion alive, answering technical concerns e.g.…”If you want to upload an attachment just click on…” “We need to include evidence in our portfolio of our participation i.e. print off parts of our internet discussions so everyone needs to get involved”.

Community of Inquiry Components	Definitions of Categories	Code	Indicators and Key Phrases
	Building discourses and understanding in the group (Highest level)	TBU	Facilitating group collaboration, identifying agreements and disagreements, ensuring an appropriate climate for discussion, summarising, using key questions to move the discussion on, and encouraging all to participate. e.g. “Well done to everyone on completing our first discussion ... The 3 main ideas for a code of conduct for medical students are as follows: 1) Always seek advice if you feel you need help. 2) Only do what you feel competent to do. 3) Always be reliable and punctual...” “We now need to move onto our next discussion on Safe Prescribing”.

Table 12: The Community of Inquiry Model - Tutor Presence (Garrison et al. 2000)

3.30 Some Limitations to Consider

The Community of Inquiry model was found to be a relatively robust tool in identifying development of the three presences in the model amongst the sample discussions examined. The inter-rater reliability between the discussion coding undertaken with a second coder progressed to Kappa of 0.95 ($p<0.01$) for discussions coded in the first year and 0.92 ($p<0.01$) for the second. However, there was some restriction in applying the model that should be noted.

First, although Garrison et al. (2000) suggest that instructors of online discussions must contribute to the dialogue rather than dominate, the model is designed to analyse online discussions that are largely moderated by a member of 'teaching' staff. As discussed, the component that represents this is termed 'Teacher Presence'. In this study however the discussions were peer facilitated by the students themselves with no input from 'Teachers'. Students adopted the role of a 'Facilitating Tutor' and this term did therefore not accurately reflect the context of the discussions. As the word 'teach' invokes notions of 'instructing' and 'educating' this was subsequently altered to 'Tutor' presence which conjured up more of a 'coaching' and 'preparing' function. At the time this seemed more closely linked to the role of the Student Peer Facilitator without unreasonably modifying the language used within the model. On reflection however, 'Facilitator' presence may have been a more appropriate descriptor to use. Furthermore the model did not recognise 'Student' presence as a distinct category which would have been helpful in exploring the nature of the interaction amongst the online groups as an alternative to devising a coding framework. This important aspect of the analysis framework is noted in other studies as crucial for investigating online communities (Kay, 2006).

Second, the task of analysing the data from the online discussions using the model was considerably onerous as observed by other authors (Stodel et al. 2006). The time required to analyse forty discussion group texts was demanding and difficult to do without the involvement of a second coder. The

process had to be undertaken manually and required regular discussion as a standardising measure to verify the accuracy of the coding that was being recorded. It is recognised however that this may have been reduced if a smaller number of sample groups had been selected for analysis. Still, whilst the limitations of the model were fairly explicit, the principles behind the model fitted well with the investigation of longer text messages posted in the online forums, and were therefore comparable to those that were examined throughout this part of the investigation.

3.31 Component 2 - Coding Framework Methods

During analysis of the discussions using the Community of Inquiry model, it was noticeable that in many of the transcripts of the discussions there appeared to be some difference in the responses to students who initiated discussion topics. This was in terms of the kind of facilitating skills used and the responses that were received from other members of the group. Responses were quicker and showed more evidence of facilitating techniques. Examples of this type of interaction can be seen in Appendix D. Whilst the Community of Inquiry model was able to effectively assess other levels of presences amongst the discussions it was not able to explore the nature of the facilitator language. Hence to further clarify such patterns of contribution amongst the groups, a coding framework was required. The purpose of the coding framework was to ascertain any differences between the pre and post amended training of the Student Peer Facilitators in the group discussions.

Rourke and Anderson (2002a) advise that instead of developing a new coding scheme or instrument, researchers should aim to use previously developed ones as applying existing instruments fosters replicability and validity of an instrument. However frameworks constructed by others can often be time consuming to appreciate and understand the principles behind them. There can sometimes involve a ‘forcing’ of data to fit into categories when inappropriate (De Wever et al. 2006) and hence many researchers develop their own instruments or amend existing instruments. Having

reviewed a range of published frameworks, none was found to be suitable for exploring the specific characteristics required for this part of the analysis. Another advantage of devising the framework, in contrast to employing an existing one, was that as the developer I was able to implicitly understand its functionality and how it met the needs of this research.

3.32 Sampling Strategy and Generalisability

Before employing the coding framework and examining this aspect of the group interaction amongst the discussion texts, a number of groups were selected from the original sample of twenty through non-probability sampling. This was based on researcher's judgement that each group reflected the characteristics of the third year student population. In total sixteen groups were selected (*n*=8 in 2007 and 2008 respectively). Table 13 illustrates the sample groups selected for this part of the investigation.

University Teaching Site	Sample Groups Selected (Year 1)	Sample Groups Selected (Year 2)
Hospital A	3,9	6,9
Hospital B	18,24	18,27
Hospital C	39, 42	42, 45
Hospital D	57, 63	51, 63

Table 13: Selection of Student Discussion Groups for Coding Framework

3.33 The Coding Framework Process

The process adopted for using the devised coding framework included identifying key phrases within the text outputs from the discussions together

with calculating the number of contributions. This was undertaken in several stages. First, it involved reading and re-reading the online transcripts to become familiar with the content and identify recurring patterns which formed the themes. Second by identifying the key phrases arising from the texts, the proportion of discussion threads in which group members (other than the Student Peer Facilitators) facilitated the group discussions was determined. Discussion threads selected to be defined as sequences of exchanges between two or more people then became the unit of analysis for subsequent investigation (Schrire, 2006).

A coding letter of A-D was then assigned to entries in the discussions to specify ‘Indicators for Triggering Events’. It was further decided that a numbered scoring of 0-2 should be adopted and these were allocated to entries in the discussion to indicate the ‘Nature of Facilitation’. As a result of this a comparison was then made between the samples of groups selected from both years. As the population within the two year groups were independent and the data was non-parametric, statistical significances were analysed using Mann-U Whitney tests. Finally to document this, an analysis matrix was created to record the coding of the responses for all the sample threaded discussions. The category codes and criteria used in the data coding guidelines are illustrated in Table 14 and Table 15. The coding dimensions used for the analysis of Facilitator language are illustrated in Appendix E.

Category Code	Initiative of Discussion/Response from Group
A	Discussion started by Student Facilitator Trigger initiated immediate interaction from group
B	Discussion started by Student Facilitator Trigger took >2 postings for Student Facilitator to obtain a response from group
C	Discussion started by non-Student Facilitator Trigger initiated immediate reply from group
D	Discussion started by non-Student Facilitator Discussion took >2 postings for response

Table 14: Categories Devised to Analyse Student Responses with Coding Framework

Phrases Used to Identify Evidence for Facilitation	Category Code	Definition of Code
Facilitator acts by: Changing topics Summarises discussions Invites the rest of the group to contribute Examples of phrases used: "Let's start on next question". "I am attaching a file to this post which has more information related to the discussion topic, and has various links for us to follow up and read". "The first exercise everyone needs to start thinking about is professionalism. Does anyone have any ideas on what professionalism entails and can we share them please?"	0	Discussions only facilitated by trained Facilitators No other group member acts as Facilitator or uses phrases denoting facilitator activity
	1	Little evidence of group facilitation by students not trained as Facilitators 1-2 of these students change topics or summarise discussions 1-2 invitations to the group to contribute 1-2 phrases denoting facilitator activity Most discussions facilitated by Facilitators
	2	Significant evidence of group facilitation performed by students not trained as Facilitators >2 group members (other than trained Facilitators) act to facilitate group discussion >2 group members (other than trained Facilitators) use phrases normally used by trained Facilitators Discussions are also facilitated by trained Facilitators

Table 15: Criteria for Identifying Evidence of Student Participation with Coding Framework

3.34 Data Collection and Analytical Approach

Similar to the process adopted with the Community of Inquiry model, the text output from the selected groups was downloaded from WebCT, transferred into Microsoft Word format and printed to facilitate analysis. To validate the coding framework a dry run was undertaken with Group 18 from Hospital A in both years of the study. The category codes incorporated into the coding framework were based on pre-established descriptors from a list of themes and patterns identified in the discussion texts. These were subsequently applied to the textual data of the discussions and were broken down into manageable chunks (Miles and Huberman, 1994; Strauss and Corbin, 1998). Thematic observations were translated and statistical analysis was later applied in order to determine validity of the themes (Denzin and Lincoln, 2003; Creswell, 2007).

The practice of peer reviewing and debriefing is considered valuable towards building credibility for a study. Erlandson et al. (1993: 140) note it allows someone who is a 'professional outside the context and understanding of a study to analyse materials, test hypothesis, and listen to ideas and concerns'. To further validate the framework a colleague/fellow researcher based at the MMS at the time of this study was therefore asked to independently code four of the transcripts to test out its reliability. Full agreement was reached with the second coder on all but two entries of the coding. From discussions held these transcripts were then used to refine the coding scheme. Results were reviewed and the remaining twelve groups from the sample were then analysed independently by the researcher.

3.35 Some Limitations to Consider

The coding framework devised for this part of the investigation was a convenient tool for the type of analysis undertaken in this instance. The framework was found to be reliable in that a high degree of inter-rater reliability was achieved between the coders (Kappa 0.908 for data analysed

using the criteria summarised in Table 14 and 0.811 for that analysed using criteria in Table 15). However, due to time constraints, it was not possible to re-analyse the discussions and refine the coding framework further. It is recognised therefore there may be a need for a more systematic approach for the evaluation of this coding framework.

3.36 Additional Exploration of Gender Contribution

Throughout explorations of the discussions with both coding instruments there appeared to be some discrepancy in the involvement of students according to their gender in the discussions examined. As discussed in Chapter 2, several studies concerned with online student discussion activities suggest that male participants generally contribute to the discussions less than females (Bostock and Lizhi, 2005; Caspi et al. 2008). This notion correlated with implications drawn from Case Study 1. In order to explore this concept and the potential impact of the amended training on the gender contributions, a comparison was therefore made amongst the male and female contributions within the online groups. Contrasts were made from groups taken from the original twenty groups previously selected for examination with the Community of Inquiry model and the coding framework.

For each year contributions by male student participants to the online discussion postings were compared to those of the female participants in two ways. First, the gender of the Facilitators was identified in each of the groups through statistical information available through databases at MMS and within the WebCT learning platform. Second, the percentage of contributions by male and female participants to the discussions was compared to the proportion of male and female participants in the whole of the Year Three student cohort for both years of the study. The proportion of male student participants who contributed was then compared to that of female participants who contributed in both the first and second year of the study. Statistical tests using Mann Whitney 2-tailed tests were subsequently conducted in order to confirm these comparisons. The flow diagram

illustrated in Figure 9 summarises in detail how these processes were undertaken throughout Case Study 2.

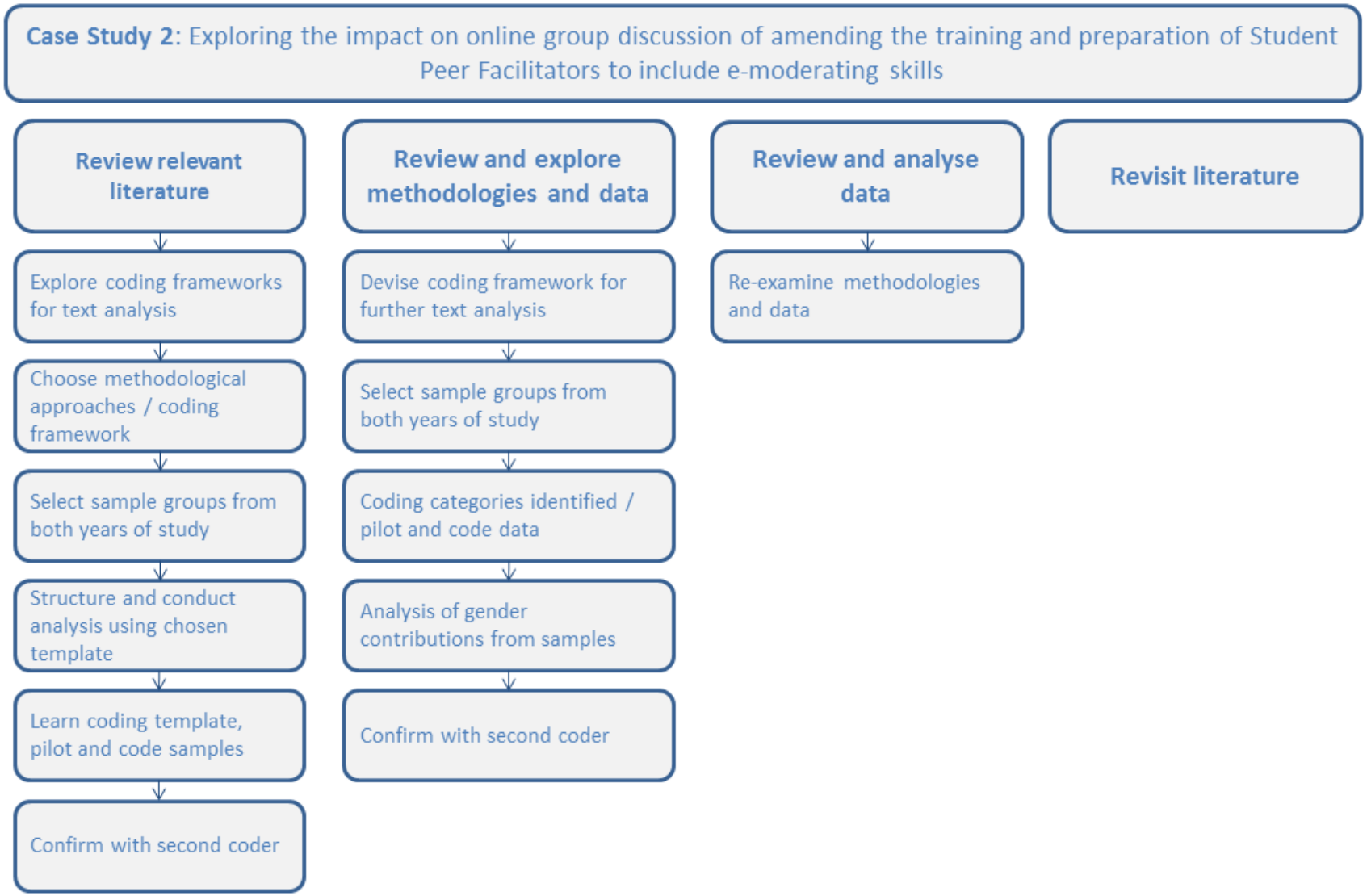

Figure 9: Research Design Processes Adopted - Case Study 2

3.37 Chapter Summary

The chapter has centred on methodological principles and procedures that were adopted throughout the two case studies conducted for this research. A mixed method approach was used allowing insights into students' perspectives to be gained from multiple sources. Using mixed methods helped weaknesses apparent in one methodology to be offset through the use of the additional methods (Bryman, 2008).

In the first year Case Study 1 addressed Research Aims 1 and 2, and sought to explore medical student's perceptions of using Student Peer Facilitators for their online group discussion activities. This was achieved through the use of quantitative and qualitative methodologies applied through questionnaire, interview and focus group methods. In the second year, Case Study 2 addressed Research Aims 3 and 4 and examined the impact of introducing e-moderating skills into the training and preparation of the Student Peer Facilitators on the online discussion amongst a sample number of student groups. This was achieved through analyses of the text output of online discussions using the Community of Inquiry model and a specially devised coding framework. Collectively these approaches helped to address Research Aim 5, which sought to explore the broader implications for educational practice in implementing Student Peer Facilitators in an online community of learners for collaborative group discussion. How Case Study 1 and 2 fit within the overall structure of this thesis is illustrated in Figure 10.

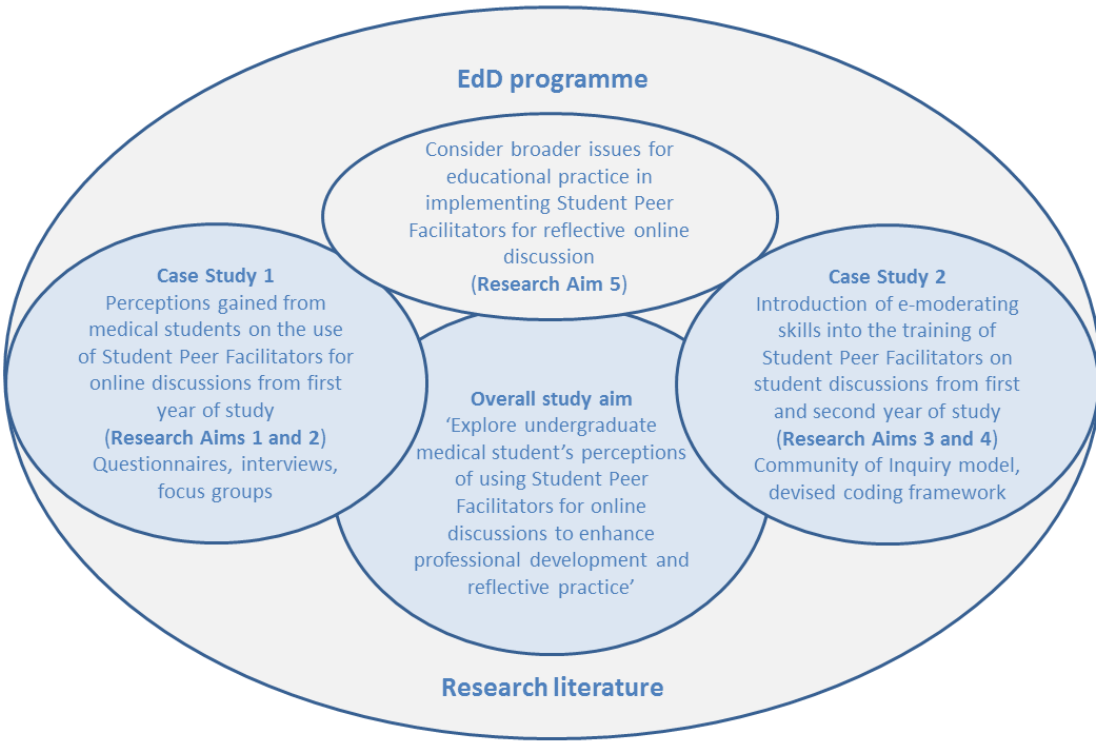

Figure 10: Representation of Case Study 1 and 2 within the Structure of Thesis

This chapter has laid the groundwork for the following two chapters where findings and data analysis within the two case studies are discussed. Each case study presents a different perspective on the implications of introducing Student Peer Facilitators for asynchronous online discussion activities in a medical education context. The next chapter will now present findings from Case Study 1.

Chapter 4 : Findings from Case Study 1

4.1 Overview

This chapter presents analysis and discussion of data collected during Case Study 1, which focused on explorations conducted during the first year of the study. Quantitative and qualitative data was collected from a mixture of methods. The first part of this chapter will present findings from the questionnaire data. This leads onto a presentation of findings from the interview and focus group data. The final part of the chapter will synthesise findings from each of these methods.

4.2 Restatement of Research Aims

The main aim of this study was to obtain an understanding of medical students' thoughts concerning the use of Student Peer Facilitators for online discussions. The specific research aims of this case study were to explore medical students' perceptions of an effective Student Peer Facilitator for the online discussion activities; the benefits and challenges associated with using Student Peer Facilitators for online discussions; and the broader issues for educational practice in implementing Student Peer Facilitators in online discussion groups (Research Aims 1, 2 and 5).

4.3 Component 1 - Findings from Questionnaire Methods

As discussed in Chapter 3, the questionnaires were distributed personally to third year medical students in the first year of the study. Typically this took place after lecture events and small group seminars at each of the Teaching Hospital sites linked to MMS. Using this approach enabled a good response rate to be obtained in an efficient manner.

4.4 Descriptive Data

From a population of 473 students a total of 286 questionnaires were completed resulting in an overall response rate of 60%. Table 16 provides an overview of respondents to the questionnaire. The gender division of respondents, in terms of numbers, was broadly similar to the female: male ratio of medical students in the third year of the MBChB medical programme at MMS at the time of this study.

Measure	**No. of Respondents**	
Males	104	(36%)
Females	182	(64%)
Student Peer Facilitators		
Yes	35	(12%)
No	243	(85%)
Unanswered	8	(3%)
Students		
Undergraduate	246	(86%)
Graduates	24	(8%)
Unannswered	16	(6%)
University Teaching Site		
Hospital A	46	(16%)
Hospital B	53	(19%)
Hospital C	61	(21%)
Hospital D	126	(44%)

Table 16: Categorisation of Respondents in Case Study 1: Questionnaire

4.5 Analysis of Findings from Questionnaire Methods

The structure was based on three main headings: ‘Role of the Student Peer Facilitator’; ‘Engagement and Participation’ and ‘The Online Environment’. Students were required to answer eighteen key statements associated with these headings. Alongside each of the questions, where appropriate, comments were made in the free text boxes incorporated into the questionnaire on other issues perceived as important to the students. Findings are presented by a combination of the mean and standard deviation for each of these headings, graphical representation of the responses to statements within the headings and illustrative comments made in the free text boxes under each heading. Thematic analysis of the free text comments highlighted four key themes: the role, the context, motivation and presence. These themes were then extended in the interview and focus groups subsequently conducted with volunteer students.

4.5.1 Role of the Student Peer Facilitator

Student responses to the questionnaires indicated the role of the Facilitator was largely viewed as constructive for the online group discussions. The opportunity to discuss experiences in the clinical environment; read and respond to other’s feedback and debate issues of professionalism with their peers was regarded as valuable by the majority of students.

In the first section of the questionnaire there was a focus on five statements under the heading of ‘Role of the Student Peer Facilitator’. Table 17 shows the number of responses to Statements 1-5 and the mean and standard deviation of responses to these statements. For each statement the mean was compared to a value of 3 (i.e. no opinion either way), using a one-sample t-test. Non-parametric methods are often used to analyse data from Likert scales, yet some authors also suggest employing parametric methods such as t-tests (Carifio and Perla, 2008; Norman, 2010; de Winter and Dodou, 2010). Norman (2010:627) for example, argues that parametric statistics can be used with Likert data because ‘parametric methods are

incredibly versatile, powerful and comprehensive'. P values are shown for each of these one-sample t-test comparisons, revealing that responses to statements 1, 3 and 5 rated significantly more positive than 3.

4.6 Responses to Role of the Student Peer Facilitator

The table below represents student responses to the first section of the questionnaire which focused specifically on perceptions of the role of the Student Peer Facilitator.

Statements	No. of Respondents	Mean ± SD	p
1. The Student Facilitator effectively supported and promoted group discussions	285	3.16 ± 1.17	<.05
2. The Student Facilitator gave regular feedback and guidance to my group	285	2.87 ± 1.12	n.s.
3. The professional debates discussed were effectively resolved	284	3.14 ± 1.01	<.05
4. My group discussions benefited from having more than one Student Peer Facilitator	188	2.92 ± 0.97	n.s.
5. My group discussions did not need a Student Peer Facilitator	283	3.23 ± 1.02	<0.01

Table 17: Student Responses to Statements 1-5: Questionnaire

Figure 11 shows that a greater percentage of students agreed with the statement that the Facilitator was effective in supporting and promoting the online discussions.

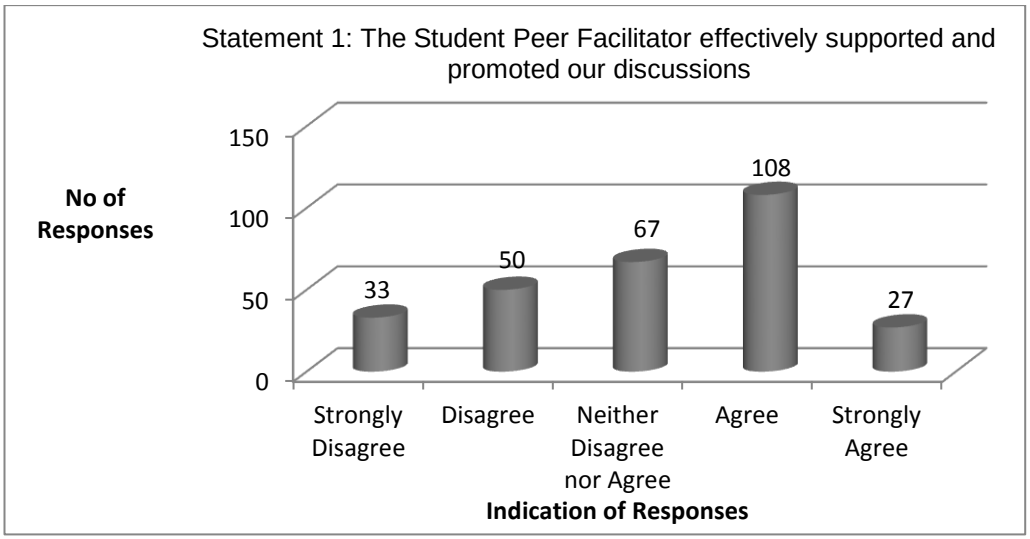

Figure 11: Student Responses to Statement 1: Questionnaire

As one student commented:

> *'Our Facilitator was really good in our discussions. She got us to attend a group meeting at the start and she was just very supportive throughout really'*. [Q24]

Similarly, Figure 12 shows that respondents regarded the Facilitators to be effective in resolving the debates that took place surrounding professionalism within the student groups.

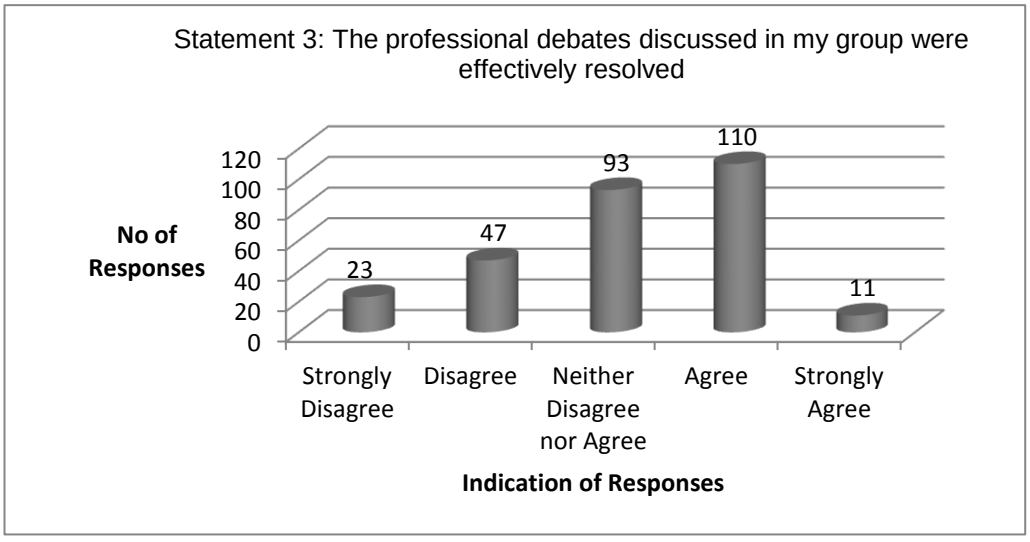

Figure 12: Student Responses to Statement 3: Questionnaire

'Our group was quite difficult and had some strong personalities in it. I felt sorry for our Facilitator. He was very good at subtly moving us along to the next topic when we had completely exhausted it'. [Q122]

However, when comparing this data with responses made to Statement 5 concerning the 'need' for a Facilitator, this appeared to conflict somewhat as can be seen in Figure 13.

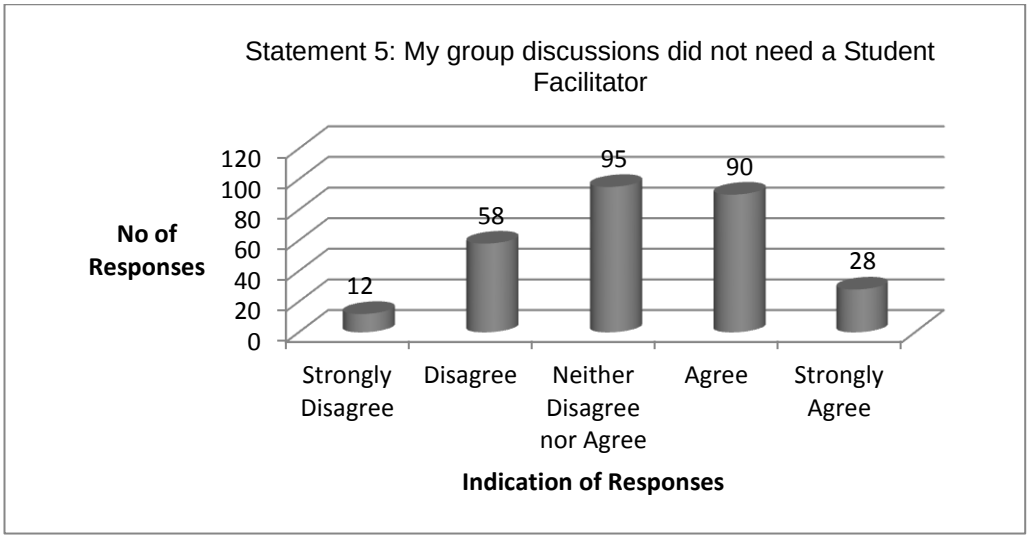

Figure 13: Student Responses to Statement 5: Questionnaire

Some of the student comments in the free text boxes echoed this difference. Defining the purpose of the Facilitator was raised as an issue for some respondents and several questioned whether their group discussions actually needed a Facilitator. Typical remarks included:

'All semester the line from our Student Facilitator was "I don't know any more than you". So it was just hard to see the point in having her'. [Q200]

'I never really understood the purpose of our Student Facilitator. They were never really any more informed about portfolio than the rest of us … so what was the point?' [Q9]

4.7 Engagement and Participation

The second section of the questionnaire focused on six statements under the heading ‘Engagement and Participation’. It was evident from statistical information obtained from the WebCT system that the overwhelming majority of the student groups participated in the online discussions (61 out of 63). Table 18 shows the number of responses to Statements 6-11 and the standard deviation of responses to the statements. As in Statements 1-5, the mean was compared to a value of 3 (i.e. no opinion either way), using a one-sample t-test. Student responses to Statements 6, 9 and 11 which were related to general communication aspects with peers rated significantly more positive than 3. However, Statements 7, 8 and 10 which were more related to online characteristics were significantly more negative than 3.

Statements	No. of Respondents	Mean ± SD	p
6. I participated regularly in the online group discussions	284	3.45 ± 1.08	<.0001
7. I read messages in the online discussion forum with my peers	284	2.65 ± 1.18	<.0001
8. I participated in my group discussions more in the online environment than I normally do in face to face group meetings	284	2.38 ± 1.10	<.0001
9. I felt confident to communicate my ideas in the online discussion forum with my peers	284	3.63 ± 0.94	<.0001
10. I sometimes felt vulnerable reflecting in the online environment to my peers	285	2.60 ± 0.99	<.0001
11. Sharing personal and professional experiences with other peers is important	269	4.03 ± 0.70	<.0001

Table 18: Student Responses to Statements 6-11: Questionnaire

It should be noted that responses to Statement 11, may have been answered more generally than just the online discussions. From the data in Figure 14, it was apparent that just over half of the respondents classified themselves as participating 'regularly' in the online group discussions. Regularly was defined on the questionnaire as 'once a day'. This would suggest that students' perception of their participation was largely accurate, as information within WebCT indicated that the vast majority of students did participate on a daily basis to the discussions.

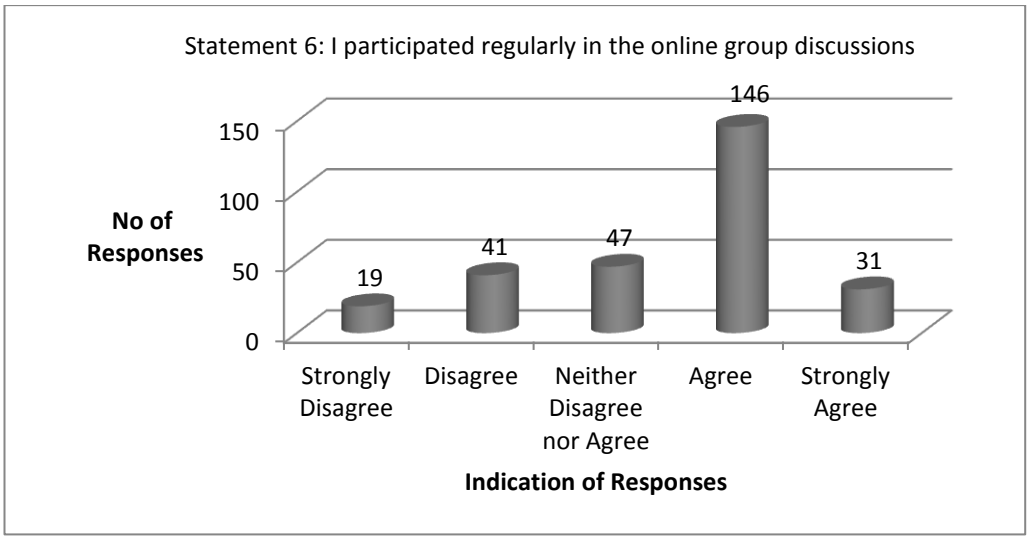

Figure 14: Student Responses to Statement 6: Questionnaire

It is important to note that participation in online discussion forums is defined in several ways within the literature (Hellsten et al. 2011). Not all students contributed (i.e. posted a message) to the online discussions. Those students who did not 'participate' regularly in the discussions were asked to provide reasons why in the free-text comment box of the questionnaire. What was interesting from this data was the perception amongst some of these students that they held their Facilitator 'responsible' for their own lack of engagement. Some students commented that if their Facilitators had displayed a more 'motivational' role, it would in turn have encouraged them to contribute more to the discussions. As two students observed:

> '*Our Facilitator did nothing and therefore no one participated in any online activities'*. [Q2]

> *'In my group I felt sorry for our Facilitator because we were just generally disinterested and unwilling to do the tasks set unless she badgered us every day'.* [Q36]

Comments made by several of the Facilitators echoed such challenges. Some described feeling 'under pressure' to inspire their peers to interact and participate in the discussions:

> *'As a Facilitator, I found it difficult to encourage my group to participate in online or offline discussion for that matter. I felt like I was just constantly hounding them'*. [Q46]

With regard to the nature of the learning environment, Figure 15 shows only a small number of students indicated that they participated more in the online environment than the face-face interactions that normally took place amongst the PBL student groups.

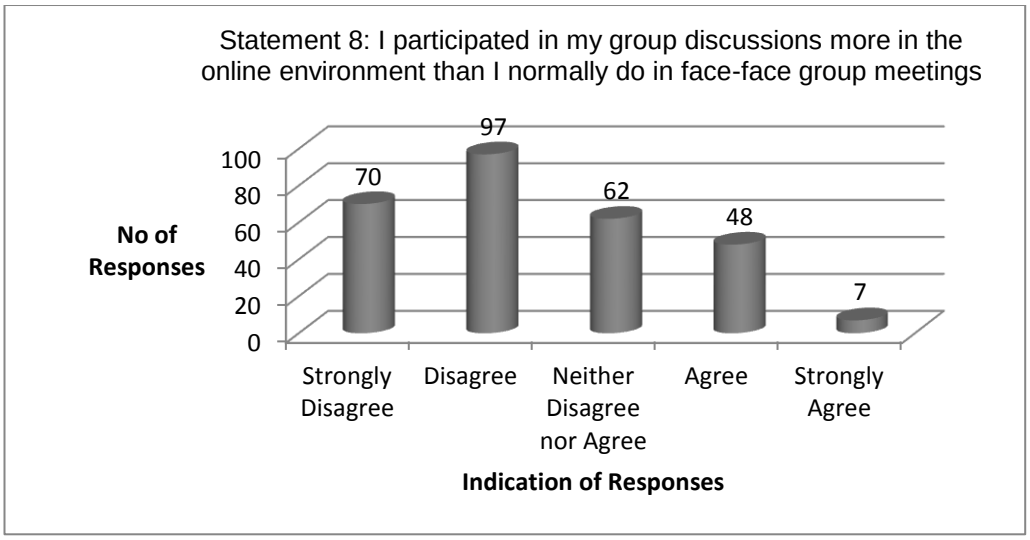

Figure 15: Student Responses to Statement 8: Questionnaire

Equally important was the atmosphere of the environment. Figure 16 shows that more than half of the student respondents rated themselves as 'confident' in discussing their ideas and sharing experiences with their peers in the online discussions.

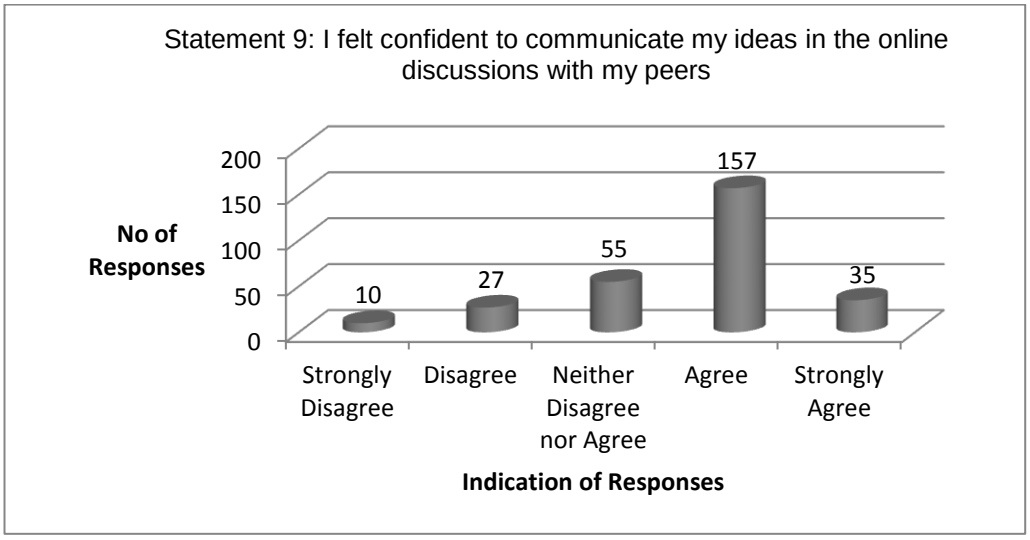

Figure 16: Student Responses to Statement 9: Questionnaire

Mirroring this finding, responses to Statement 10 on the questionnaire showed that less than a fifth of students revealed that they felt 'vulnerable' in reflecting their personal experiences and private views with peers in the online environment (Figure 17).

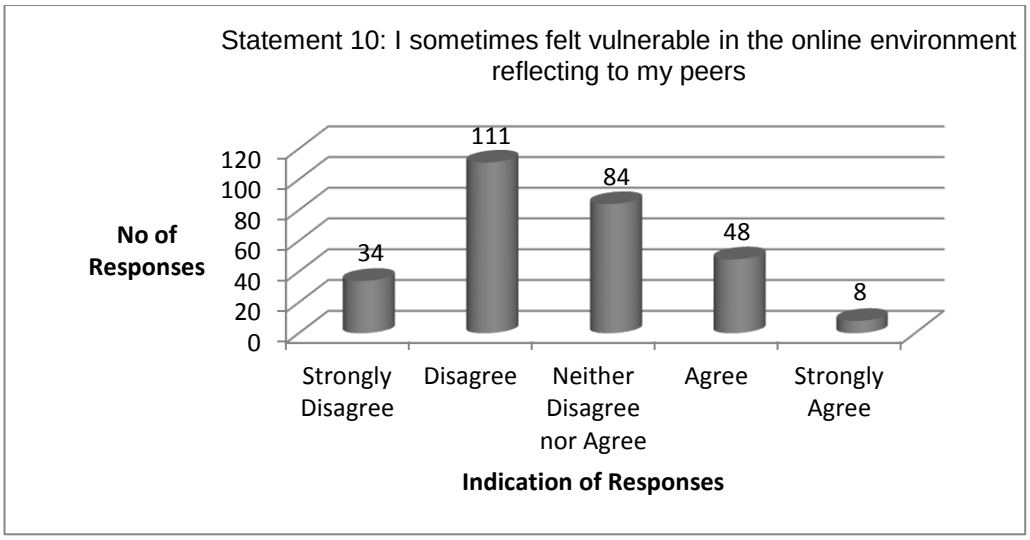

Figure 17: Student Responses to Statement 10: Questionnaire

However, not everyone felt like this:

> *'I felt I might be judged by the rest of the group if I admitted that I struggled with something. Also I didn't like the fact that what you said just 'stayed' there all year for everyone to see'.* [Q99]

4.7.1 The Online Environment

The third section of the questionnaire concentrated on a further seven statements under the heading 'The Online Environment'. It was evident that the online environment established for students was viewed by the majority as a valuable opportunity to expand their professional development activities from the traditional face-face environment.

Table 19 demonstrates the number of responses to Statements 12-18 and the standard variation of responses to the statements under the heading 'Online Environment'. As in previous statements the mean was compared to a value of 3 (i.e. no opinion either way), using a one-sample t-test.

Responses to statements 14, 15, 17 and 18 differed significantly from 3 (with mean ratings greater than 3 in each case).

4.8 Responses to the Online Environment

The following table represents student responses to these seven statements in the questionnaire which focused on the use of the online environment.

Statements	No. of Respondents	Mean ± SD	p
12. I valued the option of using an online environment for my portfolio activities	274	3.04 ± 1.05	n.s.
13. The online learning environment allowed me to be more self-reflective	272	2.89 ± 1.04	n.s.
14. The online discussions allowed those with stronger writing skills to be more prominent	274	3.20 ± 0.94	<.001
15. Absence of face to face communication had an impact on how my group communicated	274	3.40 ± 0.96	<.0001
16. The online discussions in my group promoted honesty and openness	274	3.10 ± 0.91	n.s.
17. I would prefer clinical mentors to participate in our group discussions	274	3.55 ± 0.95	<.0001
18. Reading and responding to other student feedback provided an opportunity for a fresh look at my own development	273	3.41 ± 0.95	<.0001

Table 19: Student Responses to Statements 12-18: Questionnaire

Students commented on the more positive aspects of using the online setting for their group discussions:

> *'I felt that the online environment provided a good interface to learn from other people's experiences. It was a really useful resource'.* [Q176]

> *'I appreciated the merits of the online medium for quieter group members such as myself, who often feel less comfortable in taking part in the group face-to-face discussions'*. [Q124]

Despite this however, obstacles previously noted in the literature of online communication losing expressiveness and spontaneity by Oliver and Shaw (2003) for example, were apparent in some of the responses. Figure 18 shows the lack of face-face communication for some students was a barrier, as almost half agreed with Statement 15.

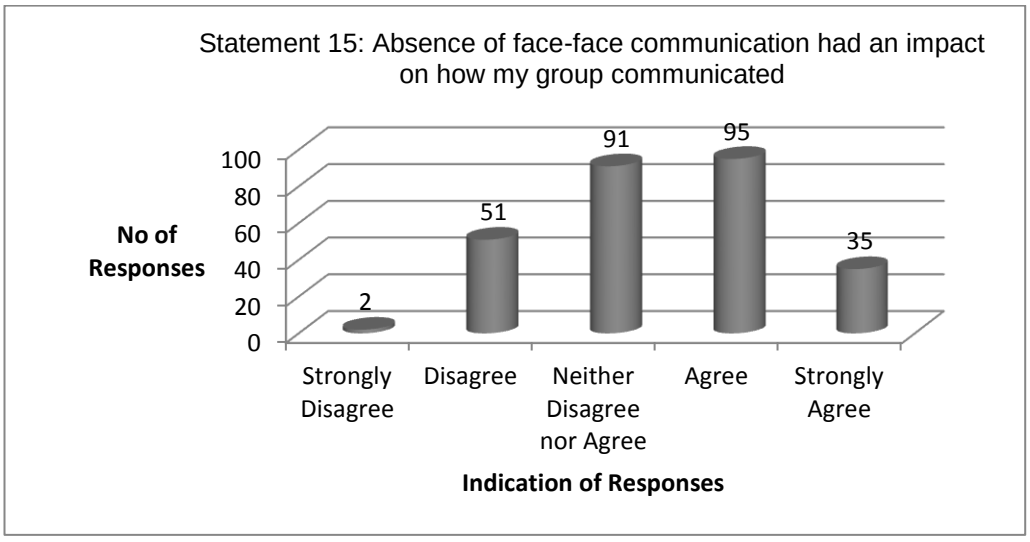

Figure 18: Student Responses to Statement 15: Questionnaire

Some of comments to support this included:

> *'Online learning presents itself as being more convenient and flexible. In my opinion a timetabled session would suit us medical students more to just get it done and out of the way. It felt like extra stress in an already packed timetable'.* [Q22]

'Communicating online seemed forced as our PBL group met regularly and discussions occurred naturally. Once all our group was sat in the computer room in the UG department writing messages to each other instead of talking face-face'. [Q185]

Another issue perceived by students as important was the notion of 'teaching or instructor presence'. Student responses to Statement 17 as illustrated in Figure 19 indicated that over half of the students who responded to the questionnaire would have preferred the presence of a Clinical Mentor in their online discussions.

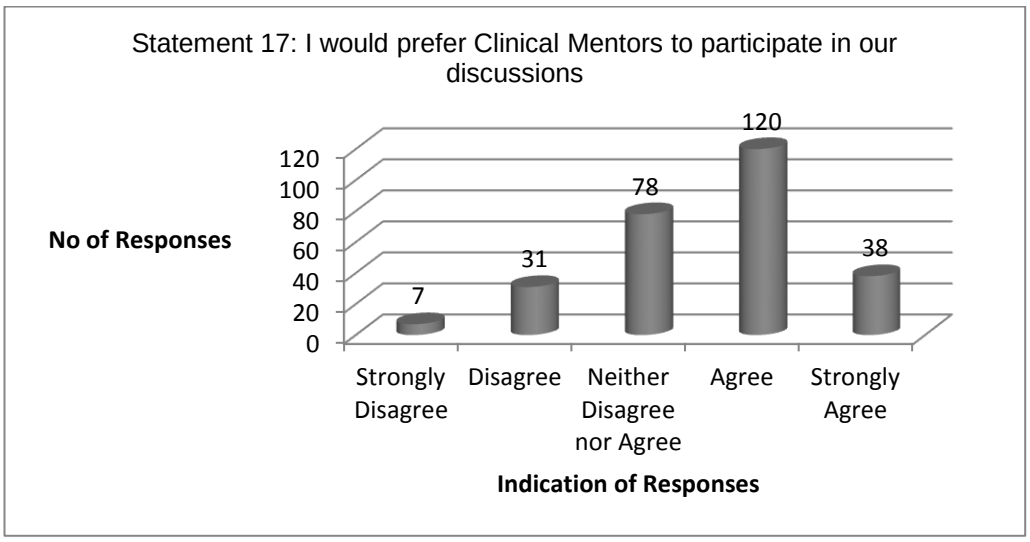

Figure 19: Student Responses to Statement 17: Questionnaire

As two students remarked:

'*Knowing that someone can help with discussions as opposed to just going round in circles would be better. Otherwise there is nobody who can bring the discussion to an end or advise you'.* [Q281]

'I think having a Clinical Mentor in our discussions would have been much better instead of just us students'. [Q98]

With regard to reflection, over half of the student respondents agreed that being able to read and respond to other students experiences seemed to help their own reflective development as shown in Figure 20.

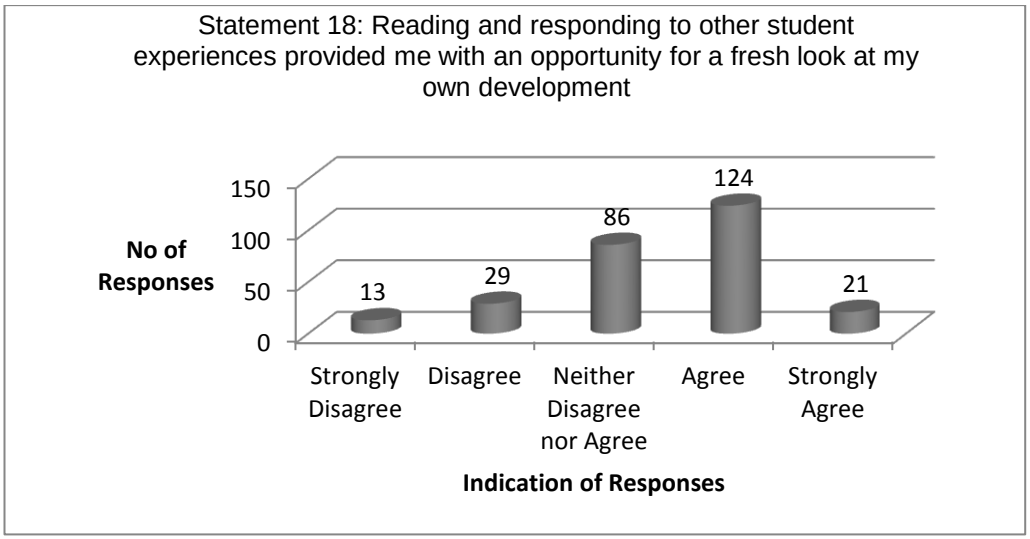

Figure 20: Student Responses to Statement 18: Questionnaire

Further to the key statements and comments arising from the free text boxes being analysed, two supplementary areas were also examined, that of Facilitators, Non-Facilitators and gender. The purpose of this was to determine whether there were any differences between the responses from these categories and explore any influences on the discussions.

4.8.1 Facilitator and Non-Facilitator Differences

Respondents to the questionnaire comprised of a mixture of Student Peer Facilitators and Non-Facilitators. In order to ascertain whether or not the role of the Facilitator influenced response tendencies, unpaired t-tests were conducted comparing the mean Facilitator versus Non-Facilitator (all other students) response rating for each of the statements on the questionnaire. This analysis only included those responses who indicated that they were either a Facilitator or Non-Facilitator. Responses to Statement 4 were lower as this question may not have been relevant to all the groups. Over half of the statements on the questionnaire showed no significant difference in responses from Facilitators and Non-Facilitators. However, there were significant differences revealed in responses to seven statements on the questionnaire (1, 2, 3, 6, 9, 15 and 18).

Statements 1, 2 and 3 were related to the role of the Facilitator in the group discussions in terms of providing support, guidance and resolving debates amongst the groups. Statements 1 and 2 both showed a statistical difference ($p < 0.05$) between the responses from Facilitators and Non-Facilitators. In Statement 3 there was higher significant difference ($p < 0.001$) in responses from Facilitators and Non-Facilitators. This would imply that in general the Facilitators viewed their input to be of value for the group discussions and would echo other research that has demonstrated Facilitators can enhance the educational value of online group discussions (Curran et al. 2005; Sargeant et al. 2006). It should be noted however that other members of the groups may have had some input into resolving debates.

Statements 6 and 9 were associated to students' participation and engagement in online discussions with their peers. Responses from Facilitators and Non-Facilitators to both of these statements showed significant differences ($p<0.1$ and $p<0.5$) respectively indicating a more positive response from Facilitators than Non-Facilitators. This may suggest a link between the motivational drive of Facilitators and the behaviour and engagement of others within a group and would resonate with similar findings from other studies (Rourke and Anderson, 2002a; Hew and Cheung, 2010).

In Statements 15 and 18 which were linked specifically to communicating and reflecting in an online learning environment, a significant difference of ($p<0.1$) was also revealed from Facilitator and Non-Facilitator responses. Results of these comparisons can be seen in Table 20. This difference indicated that Facilitators perceived interacting in the online environment more positively than other members of the student groups. Enthusiasm and interest shown by a Facilitator in online discussion environments have been demonstrated to affect the motivation and contribution of other members of the group (Xie et al. 2006).

Statement	Student Peer Facilitators: No. of Respondents	Student Peer Facilitators: Mean ± SD	Non-Facilitators: No. of Respondents	Non-Facilitators Mean ± SD	p
1. SPF effectively supported and promoted discussions	34	3.62 ± 1.02	243	3.08 ± 1.19	<.05
2. SPF gave regular feedback and guidance to my group	34	3.32 ± 0.88	243	2.79 ± 1.14	<.05
3. The professional debates discussed by my group were effectively resolved	34	3.71 ± 0.91	242	3.05 ± 1.01	<.001
4. My group discussions benefited from having more than one SPF	20	3.30 ± 0.92	164	2.86 ± 0.96	n.s.
5.My group discussions did not need a SPF	33	3.24 ± 1.06	242	3.22 ± 1.03	n.s.
6. I participated regularly in the online group discussions	35	4.00 ± 0.94	241	3.37 ± 1.07	<.01
7. I read messages in the online discussions but did not post/respond to any messages	35	2.49 ± 1.15	241	2.66 ± 1.17	n.s.
8. I participated in my group discussions more in the online environment than I normally do in face-face group meetings	35	2.43 ± 1.20	241	2.37 ± 1.09	n.s.

Statement	Student Peer Facilitators: No. of Respondents	Student Peer Facilitators: Mean ± SD	Non-Facilitators: No. of Respondents	Non-Facilitators Mean ± SD	p
9. I felt confident to communicate my ideas in the online discussion forum with my peers	35	4.00 ± 0.80	241	3.60 ± 0.94	<.05
10. I sometimes felt vulnerable reflecting in the online environment to my peers	35	2.63 ± 1.11	242	2.56 ± 0.97	n.s.
11. Sharing personal and professional experiences with other peers is important	33	4.18 ± 0.68	229	4.03 ± 0.66	n.s.
12. I valued the option of using an online environment for my reflective portfolio activities	33	3.12 ± 1.17	234	3.02 ± 1.03	n.s.
13. The online learning environment allowed me to be more self-reflective	33	3.06 ± 1.12	232	2.85 ± 1.02	n.s.
14. The online discussions allowed those with stronger writing skills to be more prominent	33	2.97 ± 0.98	234	3.23 ± 0.93	n.s.
15. Absence of face-face communication had an impact on how my group communicated	33	3.88 ± 0.93	234	3.32 ± 0.95	<.01

Statement	Student Peer Facilitators: No. of Respondents	Student Peer Facilitators: Mean ± SD	Non-Facilitators: No. of Respondents	Non-Facilitators Mean ± SD	p
16. The online discussions in my group promoted honesty and openness	33	3.39 ± 0.90	234	3.07 ± 0.89	n.s.
17. I would prefer Clinical Mentors to participate in our group discussions	33	3.70 ± 0.85	234	3.55 ± 0.95	n.s.
18. Reading and responding to other student experiences provided an opportunity for a fresh look at my own development	33	3.76 ± 0.71	233	3.36 ± 0.96	<.01

Table 20: Comparison of Responses Divided by Student Peer Facilitators and Non-Facilitators: Questionnaire

4.8.2 Gender Influences within Online Discussion

To ascertain whether or not the gender of the students influenced response tendencies, unpaired t-tests were also conducted comparing the mean male versus female response rating for each statement. Results of these comparisons can be seen in Table 21. The majority of statements on the questionnaire showed no significant difference in responses from male and female respondents. However, there were differences revealed in responses to Statement 4 and Statement 15.

Female students responded somewhat more positively to the role of the Facilitator than the male respondents. In Statement 4 (‘my group discussions benefited from having more than one Student Peer Facilitator’) there was a statistically significant difference ($p < 0.05$) in responses from male and female students. The females (mean = 2.92) were somewhat more positive about this statement than the males (mean = 2.73). This would support other authors who have found female learner’s communication in online environments to be typically more interactive and socially orientated than males (Bostock and Lizhi, 2005).

In Statement 15 (‘absence of face to face communication had an impact on how my group communicated’) a statistical difference ($p < 0.05$) was found in responses, with male students (mean = 3.58) indicating a more positive response than female students (mean = 3.40). This result implied that the male respondents preferred the group discussions to be in a face-face environment rather than online. The topic of the influence of gender in online discussion environments is revisited in Case Study 2.

Statement Number	Males: No. of Respondents	Males: Mean ± SD	Females: No. of Respondents	Females: Mean ± SD	p
1	104	3.20 ± 1.17	181	3.14 ± 1.18	n.s.
2	104	2.83 ± 1.14	181	2.90 ± 1.11	n.s.
3	104	3.06 ± 1.02	180	3.18 ± 0.99	n.s.
4	78	2.73 ± 0.99	111	3.05 ± 0.94	<.05
5	104	3.26 ± 1.00	179	3.21 ± 1.03	n.s.
6	104	3.31 ± 1.17	180	3.54 ± 1.01	n.s.
7	104	2.68 ± 1.18	180	2.63 ± 1.18	n.s.
8	103	2.38 ± 1.12	181	2.38 ± 1.10	n.s.
9	103	3.51 ± 1.01	181	3.70 ± 0.90	n.s.
10	104	2.73 ± 1.02	181	2.52 ± 0.97	n.s.
11	95	4.06 ± 0.86	174	4.00 ± 0.59	n.s.
12	98	2.99 ± 1.13	176	3.07 ± 1.00	n.s.
13	98	2.82 ± 1.08	174	2.94 ± 1.02	n.s.
14	98	3.30 ± 0.88	176	3.16 ± 0.86	n.s.
15	98	3.58 ± 0.94	176	3.30 ± 0.95	<.05
16	98	3.00 ± 0.99	176	3.16 ± 0.86	n.s.
17	98	3.59 ± 0.98	176	3.53 ± 0.94	n.s.
18	97	3.25 ± 1.08	176	3.50 ± 0.85	n.s.

Table 21: Comparison of Responses by Male and Female students: Questionnaire

4.9 Discussion of Findings from Questionnaire Methods

Inferences drawn from this part of the analysis suggest that the majority of respondents perceived the role of the Student Peer Facilitator as a beneficial opportunity to support their online learning activities. However, mixed responses were received concerning the nature of the online environment as a platform for the group online discussions. Although the majority of students revealed they did contribute to the online discussions, there was recognition that some were more active in the face-face discussions that took place concurrently with the online discussions. Students identified various challenges associated with the role of a Student Peer Facilitator and the nature of the discussions.

From this analysis the most salient points drawn from student responses are summarised below. These are revisited and synthesised with findings from the interview and focus group components of this case study in Chapter 6.

- Students demonstrated a mixed understanding of the role of the Student Peer Facilitator. Introducing such a role needed to be clarified and understood by all members of the group with a clearly stated purpose at the outset.

- Being part of an online community with peers was a new experience for the students in this study. Therefore the context, educational culture and gender of the students within an online discussion community needed to be taken into account when establishing activities in the online environment.

- The impetus of the Student Peer Facilitator influenced the levels of motivation amongst the student groups, and it was hence important for this to be recognised when building and sustaining participation effectively in online discussions.

- Discussing with peers rather than Tutors in the online environment was preferable for some students, yet equally others sought a ‘Tutor’

presence in terms of answering questions or resolving the debates. Thus establishing a mutually supportive learning environment required some monitoring in terms of the direction of the group.

This analysis raised further issues. For example, the specific contextual and educational aspects to be taken into account when establishing group online discussions; how the motivation of a Student Peer could affect the levels of contribution amongst the groups and the issues of having, or rather not having, a Tutor presence in the online discussions.

The second component of this analysis therefore sought to expand upon these issues through the use of qualitative interview methods conducted with volunteer students. The following section will now describe these findings.

4.10 Component 2 - Findings from Interview Methods

For this part of the case study interview methods were chosen in order to explore the findings from the questionnaires in more depth. Twenty seven semi-structured interviews were conducted with volunteer students comprising of questions and prompts based on key issues that arose as significant to students from the questionnaire data. A detailed description of the rational and development of the interviews is provided in Chapter 3 (Section 3.17).

4.11 Descriptive Data

As described in Chapter 3, all third year medical students on the MBChB programme in the first year of this study were invited to take part in the interviews. A quota of five interviews with volunteers from each of the four Teaching Hospital sites was intended. Due to the number of responses received it was possible to achieve this number, and interviews were conducted at each of the four sites with volunteers evenly spread amongst the sites. Table 22 and Table 23 show the different categories of student participants and the percentage of participants at each of the Teaching Hospital sites.

Measure	No. of Participants
Males	10 (37%)
Females	17 (63%)
Student Facilitators	8 (30%)
Non-Facilitators	19 (70%)
Undergraduate Students	25 (93%)
Graduate Students	2 (7%)

Table 22: Categories of Student Participants: Interviews

Measure	No. of Participants
Hospital A	7 (26%)
Hospital B	6 (22%)
Hospital C	5 (19%)
Hospital D	9 (33%)

Table 23: Categories of Teaching Hospital Sites: Interviews

4.12 Analysis of Findings from Interview Methods

Data gathered during the student interviews was iterative and was analysed using grounded theory methodology principles as defined by Glaser and Strauss (1967). Logical associations were also made with arguments within the literature as discussed throughout Chapter 2. Initially twelve broad themes were drawn from conceptual analysis of the interview data however similarities between the themes meant they were collapsed into six and then eventually three recurrent themes. As a result of these combined processes the following themes emerged: Student Expectations and Understanding; Challenges of Facilitating Peers; Skills, Attributes and Training. Each of these themes is discussed in turn with illustrative quotations extracted from the interview transcripts indicating Students as [S] and Student Peer Facilitators as [SPF].

4.13 Student Expectations and Understanding

The vast majority of students (*n*=26) interviewed perceived the online discussions to be beneficial for enhancing their reflective discussions, and for receiving encouragement and feedback from their peers.

Students made numerous positive comments during the interviews:

> *'I think it is a really good idea because it is nice to have people who are going through the same thing as you. Sometimes it is easier to talk to people your own age rather than Clinicians or Tutors from the Medical School. They are busy and don't have a lot of time and they don't get back to you as quickly as someone in your year group'*. [S15]

> *'Having the opportunity to discuss with peers really made me think about the way in which I perform as a medical student. It made me reflect about the way I act in front of patients … so that was quite good'.* [SPF4]

Despite this enthusiasm however, one interviewee felt differently which implied that the learning styles of individuals were important not to overlook:

> *'Internet-based discussions such as WebCT cannot replace face-to-face meetings. Face-face takes less time and provides more meaningful outcomes... end of!'* [S19]

The opportunity for discussion within WebCT the online environment was viewed as advantageous by the majority of students (*n*=19). Students noted the flexibility, in terms of access and convenience, afforded by the nature of the asynchronous discussion forums:

> *'If it's someone that doesn't handle group situations well, then it [WebCT] gives them a bit more 'breathing space' if you like. It allows you to discuss things … maybe more about your fears or any difficulties that you are having that you wouldn't want to admit in a face-face group situation'.* [SPF10]

> *'It's so much easier to fit in fifteen minutes of an evening to write a reply to someone on an online discussion board like WebCT than it is to try and meet up with someone face-face'*. [S3]

However, the remaining eight students disagreed. Transferring communication onto the online learning platform created, what these students perceived, to be a rather 'simulated' environment. This perception was emphasised by descriptors such as 'massive effort', 'overly contrived' and 'duplicating discussions'. This again would suggest that the learning

preferences of students were important to consider. As two students explained:

> *'A lot of issues come up when we discuss things in the week anyway, and a face-face discussion for us... well certainly for me, is much more beneficial at other times'.* [S14]

> *'It [WebCT] is quite an artificial environment though … the way people write is very different from the way people speak …. And a lot of the time we felt like we were constantly repeating the discussions we'd already had just so we had something to say*'. [S3]

Fundamental to the nature of the learning environment was the apparent diversity in the learning styles of the individual students themselves. Some students were clearly more independent than others. Influential factors revealed by students included the nature of the online environment and the educational culture where students were based for their clinical studies. A few students disclosed that they simply did not get 'any pleasure' from discussions in an online environment. This is a perception noted by other authors who found not all learners 'enjoy' online collaborative learning in the form of a discussion, and value of the discussion forums are not always considered with a positive outlook (Williams and Pury, 2002). It was not obvious however, whether this was peculiar to the student culture of this study. It could be that the cultural perspective of medical students geographically dispersed for aspects of the delivery of their education may not be particularly suited to using online environments for discussion activities. Students shed some light on the subject:

> *'I think there is an assumption that young people like computers - in reality a lot of us prefer face-face communication'.* [S8].

> *'Theoretically having discussions is important - but debating is much more fruitful if face-face rather than an Internet site'.* [S9]

When asked about their expectations of the role of the Facilitator, a small number of students (*n*=3) indicated they had 'absolutely no understanding' beforehand of what the role might entail. However, the majority (*n*=20) indicated they did have 'some prior level of understanding' of the role with the

remaining students (*n*=4) indicating a 'good understanding' of what the role might involve. When asked to expand on what this understanding was, students reported previous experience of mentoring. However, most of the experiences described were based on mentoring students in lower year groups and were not with peers. The range of responses included:

> *'We got an email about the peer facilitators and one of the girls in our group was saying she would be doing it, but I didn't know what she would be doing or anything like that … I had absolutely no idea'.* [S9]

> '*As someone a little bit older than most third year students I had some familiarity with it … it wasn't a totally new idea to me. I've always been keen on students as teachers and students as leaders that sort of thing you know … I'm very political. It was really nice to see it brought in here'.* [SPF10]

Despite this, at the end of the first year of this study when the interviews were conducted, understanding of the role of the Student Peer Facilitator had been developed and students were able to describe characteristics they perceived to be important for an effective Facilitator. Some of these included having confidence, good leadership abilities, being able to give advice and being an effective communicator and motivator:

> *'I think most people were expecting someone in the year above and would have preferred it because people want that confidence, sense of security and reassurance. These are all things we wanted, well expected really, from our Facilitator'.* [SPF23]

> *'I think attributes of a good Facilitator are someone who is approachable, a good communicator and who shows they are actively involved in the process – in other words that they really want to do it!'*. [S8]

There was a clear discrepancy in students' attitudes towards the purpose of the Student Peer Facilitators. A small proportion anticipated that the Facilitators had been introduced to support general issues associated with the delivery of portfolios that were maintained throughout the medical programme, such as the reflective content or order of the portfolios. Several imagined the purpose of the Facilitator was to provide the stimulus for them

to contribute to the group discussions. Some shifted accountability for participation to the discussions onto the Facilitators, and one student described it as the Facilitator's 'sole responsibility'. However, as this was not the intended remit of the Facilitators in this instance, it led to unenthusiastic views and opinions being expressed by some of the participants. In addition it appeared to have detrimental effects on the levels of motivation and contribution exhibited amongst some of the student groups. The flip side to this was that several of the Facilitators interviewed envisaged their fellow peers would be 'intrinsically motivated' to partake in the online discussions and assumed that they would in fact need little encouragement from them to connect with the discussions. As one Facilitator commented:

> *'I emailed the group many times and asked them to contribute. Once a student got upset with me for highlighting that they hadn't contributed and I got sick of it. I thought they would all be really keen and not need me to push them'.* [SPF3]

Nonetheless, when asked what features of facilitation students found to be most useful for their group discussions, the majority (*n*=22) commented that the momentum of the Student Peer Facilitator was one of the key features that assisted the development of their discussions and admitted that it did affect their own levels of motivation:

> '*He [SPF] was very proactive and really helped to keep us on track. He was always prompting us into doing things. That just seemed to work for us and in the end we just contributed more, mainly because of him'*. [S12]

> *'Our Facilitator was definitely hands-on in getting the discussions going. She was a good motivator and got us all charged up for a good debate on professionalism starting from a bad experience she had recently had on the wards with one of the doctors'.* [S22]

It was evident that motivation was regarded as core to using the online discussions and indeed was a concept raised in the questionnaire responses. This was described in terms of the level of motivation students perceived necessary to perform the role of a Student Peer Facilitator, and their individual levels of motivation to contribute to the group discussions. As

motivation emerged as a recurrent theme throughout, those Facilitators who were interviewed were asked to give reasons for replying to the advertisement for Facilitators. Reponses ranged from having a 'genuine interest' in reflective writing, to seeing it as 'something to strengthen their CV*'*. For example, as two Facilitators commented:

> *'I enjoy English and writing so when I was going into it I thought the role was to facilitate people with their portfolio pieces and with the writing of reflective pieces …so I knew I would enjoy that role, and without sounding big headed, and I could probably be rather decent at it!'* [SPF2]

> '*The blunt response is that it's something to go on my CV and the rather selfish part I suppose is that I would try to find out more about the portfolio itself in the process'.* [SPF4]

The rationale and motivation behind undertaking the role of a Student Peer Facilitator appeared to filter down to some of those students who had not volunteered to be a Peer Facilitator. A small number (*n*=3) interviewed thought that some of the Facilitators had 'less than altruistic reasons' for applying for the role:

> '*There's a group of people that have done it simply for something to put on their CV and there's the other group of people that have done it because they couldn't engage with portfolio'. We all knew that'*. [S12]

> '*Well, they [SPFs] don't like portfolio you know … they don't see the point of it, so they hoped that this would give them the 'magic key' to understanding and engaging in portfolio'.* [S8]

4.13.1 Challenges of Peer-Peer Facilitating

The second theme to emerge was linked to challenges and barriers Facilitators faced. Whilst there was a connection made by students between motivation of the Facilitators and group participation in the discussions, several other factors were raised. From the eight Facilitators who were interviewed, an overwhelming majority (*n*=7) described experiencing some difficulties in facilitating their peers for the online discussions:

'Being the same as everyone else and yet trying to be different. That was really quite tricky!' [SPF20]

'You kind of have to put on a brave face to show other students you know what you are doing if you know what I mean … but technically you are just trying to find your feet as well. That was what I found to be the most difficult'. [SPF16]

Several Facilitators commented on the level of 'accountability*'* they felt in performing the role of a Facilitator:

'I don't think my group saw me as an equal at all … because I'd been given the role of Student Facilitator, so that automatically created a hierarchy so I just found it hard to avoid. In the end the hierarchy, to an extent, formed itself. So of course I felt responsible for completing the tasks'. [SPF14]

'Well on the one hand you've got your peers … you're on the same level and you can speak very even … but because we had that 'same level' basis we didn't really know what to do and so it often felt really difficult to carry any points forward. Everyone presumed it would be me'. [SPF4]

A surprising observation was that three of the Facilitators revealed that they were sometimes 'afraid of appearing too academic' in front of their peers. This was associated with issues of 'role conflict' that was also raised in some of the interview discussions:

'It has been testing to try and take on a role as a sort of group leader without becoming bossy … and without dictating to people that are ultimately your friends and your peers. I was worried about how this would affect me'. [SPF3]

'*To be honest, I felt like others thought I was being the 'teacher' too much at times and it didn't make me feel comfortable encouraging them to participate or suggesting useful resources to them'.* [SPF25]

Other challenges noticed by several students were described as the 'false tone' that was sometimes felt to exist in the online environment, compared to the more natural communication of face-face discussion that took place amongst the groups. Because of the educational culture of the students and the diversity within their clinical placements, typically many students travelled

together; several socialised together and some even lived together. The opportunity to discuss significant learning experiences was therefore easier in these circumstances. It was emphasised that medical students possibly had more opportunity for communicating with their peers throughout the week in comparison to campus based students studying other disciplines, and this should therefore be taken into account.

Another factor raised by many students interviewed was the aptitude of the Facilitator, or the group, to effectively 'wrap up' the group discussions. There was a sense amongst students that often many of the discussions 'never came to an end' without having any 'expert' presence from either a Tutor or a Clinical Mentor. Wang (2008:39) also notes that summarising discussions was seen to be the 'top facilitation skill' as perceived by student groups explored in his study. As two students in this study commented:

> '*It's all very nice having discussions with our peers but sometimes you just want an answer. Like you know, 'what exactly should I do here?'* [S12]

> *'It would be nice to see a sort of mini-discussion by Clinicians responding to our comments and telling us what they would do in our situation. Discussions were just closed and left hanging in the air with no real conclusion'.* [S19]

This was a surprise to observe as wanting a more didactic teaching approach conflicted with the ethos of following a problem based learning programme. Even in the collaborative context of this study where the majority of students engaged in the online debate, there was still a need for a 'Tutor' or 'Instructor' presence expressed. Emphasis placed on not having an 'expert outlook' was thought to influence leadership, guidance and opinion amongst the groups. Similarly, other studies have made this observation (Mandermach et al. 2006; Vesely et al. 2007). Relevant here is Garrison et al's (2000) argument that 'teaching presence' is the responsibility of every participant in an online environment, and too little or too much teacher presence can affect building understanding and the 'closing' of discussions.

4.13.2 Skills and Attributes of Student Peer Facilitators

The third theme of skills and attributes of the Facilitator was closely linked to the first and second themes of student expectations and challenges raised in performing the role of the Facilitator. Despite the fact that some students may not have had the inherent skills required of an 'effective' Facilitator, many of those interviewed considered they had developed such skills whilst performing the role. These included building their confidence; guidance, advisory, communication and motivational skills. Furthermore, a small number (*n*=4) of students explicitly stated they considered developing such skills would be advantageous later in their medical careers:

> *'It's certainly worthwhile pursuing the peer teaching thing because it is nice to be able to have teaching from students as well. It might not be the most accurate but it is good and something I will without doubt use again in the future'*. [SPF11]

> *'There were a number of issues with just encouraging others to work and participate and that's always going to be a useful skill for the future, no matter what team you're working in'.* [SPF16]

During several of the interviews, discussion concerning skills and attributes of Facilitators was often interrelated with the subject of training and preparation for the role. It was noted by some Facilitators interviewed that in retrospect the training received was not specific enough for what the role actually entailed. Furthermore, there was an assumption amongst some of the Facilitators that the training may have helped them gain a better understanding of 'reflective learning' itself, so in this sense there was a level of disappointment in the training. Insight from those students who attended the training sessions was offered:

> *'For a lot of people we went to the training because we struggled with the portfolio itself, so we sort of thought the training would give us an inside view if you like. We thought we were going to get told about all the 'secrets' you need to know for your portfolio that would help us!'* [SPF1]

> *'I thought they would tell you about what would be in your portfolio, examples of this and that kind of thing. When I knew that it was to do with professionalism tasks I thought they'd be able to explain how to get started and have lots of ideas about where you should go with the tasks'.* [SPF8]

A spin-off from this issue was discussed by a small number of students (*n*=2) who did not attend the Facilitator training sessions. Despite their non-attendance at the sessions these students viewed themselves as being 'just as effective' in their role as those students who had attended the training.

> *'I didn't need the training. It was all stuff I would have learned how to do anyway … probably just because I'm older'.* [SPF14]

> *'I wasn't disadvantaged to any other Facilitator that attended the training session – I just picked it up as I went along'.* [SPF2]

Interestingly, there was no evidence of any differences in the output of the online group discussions that were later explored in detail within Case Study 2, where the Facilitator had not attended training compared to those who had. It should be noted however, that these students were 'mature', post-graduate students and were therefore more likely to have experienced some level of peer facilitation previously in their education. In addition, the training and preparation during this year was based on the generic training material provided by the SaP initiative and not the amended training which incorporated a focus on e-moderating skills.

4.14 Discussion of Findings from Interview Methods

Implications to be drawn from the second part of the analysis were that students viewed the use of Student Peer Facilitators favourably as an opportunity to support their learning activities in the online environment. In line with the questionnaire responses the prevailing view of many of the students interviewed was that expectations of the skills and knowledge required of a Facilitator, and levels of engagement within the group should be made more explicit. This was in terms of both the moderator of the discussion (the Student Peer Facilitator in this instance) and other members of the discussion group. In this respect the importance of training and support for Facilitators was emphasised.

The most significant themes drawn from analysis of the interviews are summarised below. These are revisited in a discussion of the questionnaire and focus group components and are presented in Chapter 6.

- Students identified an effective Student Peer Facilitator as someone who was not just confident and had skills in leadership and communication, but who could play a motivational and advisory role. Motivation levels of the individual Student Peer Facilitators had an impact on the engagement of others in the online dialogue that took place amongst the student groups.

- Students noted that using peer-peer facilitation in an online environment raised some challenges. Encouraging peers to contribute to discussions without having a 'dominant presence' was highlighted as significant by Student Peer Facilitators. Difficulties were found in keeping the discussions active as students spent a large proportion of their worked based time together. In this respect maintaining online discussion for such students may differ to other campus based students. It was therefore noted as important to consider the professional and learning culture of students when initiating such pedagogical strategies.

- Certain skills and attributes were perceived by students to be necessary for performing the role of the Student Peer Facilitator. Whilst these skills may not have been inherent in all students who undertook the role, there was value in being able to develop facilitation skills through performing the role. Student Peer Facilitators were required to perform several roles throughout the discussions, and in this respect effective training and support were seen as an important aspect of preparing for the role.

Whilst these findings provided further insight into students' perspectives they did not however highlight how students prioritised the issues discussed. The third component of this case study therefore expanded upon these findings through a focus group setting using Nominal Group Techniques. The following section will now describe these findings.

4.15 Component 3 - Findings from Nominal Group Technique Methods

Subsequent to the student interviews focus groups using the Nominal Group Techniques were conducted with twenty two students at each of the four Teaching Hospital sites. Chapter 3 (Section 3.22) describes the rationale and development of the focus group methods used for this part of the investigations.

4.16 Descriptive Data

The gender of the volunteer students was fairly equal and broadly representative of the student cohort consisting of 55% female and 45% male students. Each of the focus groups had a mixture of female and male student participants with one Student Peer facilitator present. Table 24 provides an overview of participants in the four focus groups.

University Teaching Site	Focus Group	Student Nos.	Males	Females	Student Peer Facilitators
Hospital A	1	6	3	3	1
Hospital B	2	6	3	3	1
Hospital C	3	5	2	3	1
Hospital D	4	5	2	3	1

Table 24: Categorisation of Student Participants: Focus Groups

4.17 Analysis of Findings from Nominal Group Technique Methods

Outcomes from the issues and concerns students ranked in all of the focus groups using the Nominal Group Techniques were examined and similarities noted between the emerging themes. Parallel to findings from the interview data, the most frequently raised issue by students during the focus groups was that of 'Motivation'. The second topic rated as most significant to students was the 'Role of the Facilitator'. All four focus groups ranked this in their top five priorities, and three of the groups considered it to be the second most important factor of effective online discussion.

The third debate surrounded 'Face-face versus Online Communication'. One group ranked it top of their list, whilst the other three groups ranked it within their top five. The fourth and fifth most commonly raised topics by students were 'Participation/Engagement' and 'Reflection'. Both were listed in the top five priorities by all groups. Issues that were raised after the top five had been ranked were noted along with the frequencies counted, but were not included in the amalgamation of themes. These included 'Tutor Presence; 'Training', 'The Purpose of the Discussion Activities'; and 'Opportunities to View Student's Opinions', 'Training' and the 'False Tone' of the discussions. These statistics were classified by order of the most popular in terms of the proportion of the students.

Some of the themes from the focus groups correlated to those that had arisen during the interviews and Figure 21 shows how these themes overlapped.

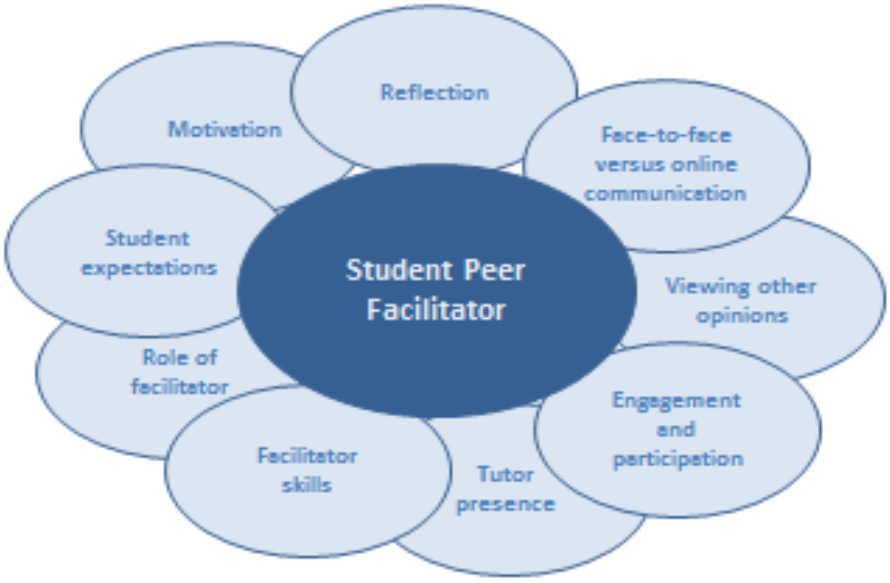

Figure 21: Overlapping Themes to Emerge from Interviews and Focus Groups

Themes from each of the focus groups were then coded for frequency and concepts. Table 25 illustrates how the ranking of issues and concerns raised by students were prioritised within the focus groups.

University Teaching Site	Focus Group	Ranked Order by Group	Issues and Concerns
Hospital A	1	1	Face-face communication
		2	Role of Facilitator
		3	Motivation
		4	Participation/engagement
		5	Reflection
Hospital B	2	1	Motivation
		2	Role of Facilitator
		3	Face-face communication
		4	Participation/engagement
		5	Reflection
Hospital C	3	1	Role of Facilitator
		2	Motivation
		3	Face-face communication
		4	Participation/engagement
		5	Reflection
Hospital D	4	1	Motivation
		2	Role of Facilitator
		3	Face-face communication
		4	Participation/engagement
		5	Reflection

Table 25: Ranked and Prioritised Issues from Focus Group Sessions

Initially eight themes were generated from issues discussed during the sessions. These were ‘Role of the Facilitator’; ‘Motivation’; ‘Reflection’; ‘Superfluous Work’; ‘Face-face versus Online Communication’; ‘Skills of a Facilitator’; and ‘Participation’ and ‘Engagement’. However, similarities between the themes were explored and it was decided to amalgamate some themes based on how they had been discussed during the focus groups. For example, ‘Participation’ and ‘Engagement’ were combined because student’s discussion concerning both these themes focused on contributions to the online discussions. The ‘Role of the Facilitator’ was also combined with ‘Skills of a Facilitator’ as these discussions were both connected to the general performance of the Facilitator. Likewise ‘Face-face versus Online Communication’ was joined with ‘Superfluous Work’ of the online discussions because these discussions focused on the nature of communicating online rather than in a face-face environment. A final list of five themes was generated to illustrate the key issues that students viewed as the most important. Figure 22 shows how the rankings from each of the focus groups were pooled.

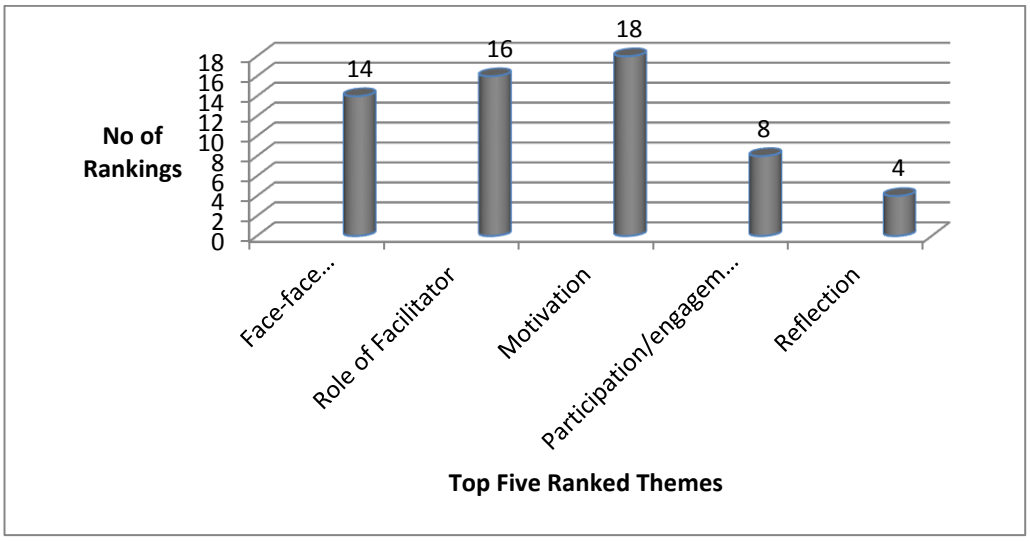

Figure 22: Combined Ranked Themes from Focus Groups

The next section will discuss students' views relevant to these themes generated during the process of the focus groups sessions. These are based on individual information students recorded on the post-it notes under the three sub-headings of 'Likes', 'Dislikes' and 'Improvements' related to the use of Student Peer Facilitation for the online discussions, and on the facilitated discussions that took place during each focus group. Findings from each of the sub-headings are discussed in turn, with illustrative quotations provided. The student and focus group number for each quotation is indicated in parenthesis as student reference number and focus group number [S, G].

4.18 Theme 1: Using Student Peer Facilitators

4.18.1 What Students Liked About Student Peer Facilitators

Much discussion in the literature concerned with online discussion relates to the benefits of communicating with others, sharing opinions and skills, asking thought-provoking questions and the importance of training and preparation for the role of a Facilitator (Sargeant et al. 2006; Rovai, 2007). Student participants in three of the focus groups conducted expressed agreement with these notions and commented that they found it easier to discuss clinical experiences with their peers rather than a Tutor or a Clinical Mentor [Focus Groups 2, 3, 4]. For example as noted by two students:

> *'It was good because you are not worried that the Student Peer Facilitator will judge you … like a Tutor might do'.* [S4, G4]

> *'I liked having a person on the same level to talk to instead of the barriers you often face when talking to a member of staff*'. [S1, G3]

The educational value of having a Student Peer Facilitator was recognised by students in all focus groups during the process of peer interaction. Facilitators were described as being a 'useful point of reference' by students in three of the focus groups:

> *'For me, having someone to talk to and refer any problems to was really helpful'.* [S6, G4]

Students in all the group discussions indicated that having a 'motivated' Peer Facilitator was seen as a definite advantage.

> *'I liked having a Facilitator. Ours was very good and she definitely kept me motivated and the rest of our group to get things done!'* [S1, G1]

> *'A Facilitator who is approachable ... like ours was can help you move through the tasks smoothly, individually and as a group'.* [S1, G3]

Students in two of the focus groups noted a high level of what they termed as 'generosity' displayed by others in their group in solving problems [Focus Groups 1, 3]. As commented:

> *'Some people in our group came up with different solutions to problems that were posted, and some pointed to useful references or resources that they had found. It was good to see others being generous in sharing their resources '.* [S2, G3]

> *'When our group discussions worked it wasn't enforced it became more like people swapping points, experiences and resources … and I really liked that'.* [S1, G1]

4.18.2 What Students Disliked About Student Peer Facilitators

In line with the findings from the interview data, there was some ambiguity surrounding the role of the Student Peer Facilitator within the focus groups. In discussions within two of the focus groups [Focus Groups 1, 3], some students perceived the purpose of the Facilitator was to 'smooth the general progress' of their portfolio activities rather than moderate the online group discussions. Others saw the role as a person who would assist with problematic issues that might arise from their clinical work based experiences. This was concurrent with issues that arose in the interview data such as hierarchy and the level of responsibility that the Facilitators experienced. Two Facilitators commented on the apparent misunderstanding surrounding student expectations of the Facilitator:

> *'As a Facilitator I often felt responsible for completing tasks on my own without the group's input*'. [S2, G3]

> *'It was difficult because you don't want to have conflicts with relationships with other people in your year. You want to be a good friend with them … you don't want to be like 'Are you doing your work?!'* [S4, G1]

Alongside this, the issue of non-participation was a topic frequently mentioned by students. Three groups revealed that only one or two members of their group had participated in the group discussion activities, whilst the remainder had not contributed in any way to the activities [Focus Groups 2,

3, 4]. This finding was related to the idea of 'responsibility' Facilitators articulated in the interviews, and the challenges faced in encouraging contribution amongst the student groups.

Some of the other challenges raised by students included clarity of the role of the Student Peer Facilitator, from both the perspective of the Facilitator and the Non-Facilitator students. Those who were not Facilitators commented on the challenges they faced, when their group was moderated by what they labelled as 'a poor Facilitator'.

> *'Lack of input from our Student Peer Facilitator was a problem. We were relying on her for direction. We just didn't have a clue!*' [S1, G3]

> *'I think the motivation of some the Facilitators was questionable. They weren't interested in the role … just putting it on their CV and that was then a problem for us'*. [S5, G4]

In this respect, the importance of training and preparation for the role of the Student Peer Facilitator was highlighted by Facilitators during three of the groups [Focus Groups 3, 4].

> *'Insufficient training for the role caused problems for me and thus our whole group'.* [S3, G3]

> *'The training was quite good and I did feel sort of prepared … but then there were challenges within our group that I just didn't envisage and I had to contact the Tutor to sort it all out'.* [S2, G4]

Other problems associated with preparation were arranging the initial face-face meeting with the student groups before the online discussions began, as suggested in the training sessions. This proved problematic due to the complex timetables of the medical students in this study and was echoed in Meyer's (2004) study that found timing and competing demands were the two main contributors to the failure of professional online discussions forums.

4.18.3 What Students Thought Could Be Improved About Student Peer Facilitators

Raising awareness of the function and purpose of the Student Peer Facilitator from the perspective of the Facilitators and the rest of the student group was suggested by all four focus groups. Increased knowledge and understanding of the role before discussions were initiated by everyone involved was considered an essential factor in enhancing the effectiveness of future discussions. In this respect the importance of timing was referred to by three of the groups [Focus Groups 1, 3, 4]. This was in relation to introducing the discussions at a point that was 'convenient' for students and when the face-face meetings were required to take place. In essence a more formalised structure was proposed for the introduction of the discussion activities [Focus Groups 2, 4].

> *'There needs to be more structure … more rules enforced for it to work, that everyone understands. We have so many other things on our timetable. I think this would greatly improve the whole thing'.* [S4, G1]

Interestingly, another enhancement recommended by two of the focus groups was a review of the Student Peer Facilitator's 'performance', preferably by a Tutor.

Whilst this was mostly noted by the Non-Facilitator participants in the focus groups, some Facilitators did agree that receiving feedback on their role (from Tutors or peers) would have been beneficial to them:

> *'Our Facilitator was rubbish and he should have definitely been reviewed. We had to 'put up and shut up' with him as he was a member of our PBL group … and as none of us had volunteered for the role, so we felt we couldn't really say much'.* [S1, G1]

> *'I'd like to have had some feedback on how I was doing to be honest. You got the training and documents but then you were just left to it really after that … and I never really knew if I was any good or not'*. [S2, G2]

4.19 Theme 2: The Online Environment

4.19.1 What Students Liked About the Online Environment

The opportunity to be involved in online debate on professional issues and respond in their own time was acknowledged as helpful by students in three of the groups [Focus Groups 1, 3, 4]. In addition, all four focus groups regarded the 'anytime and anywhere' feature of the asynchronous discussions as useful for their learning schedules. This observation also harmonised with data collected from the interviews in terms of the flexibility of the asynchronous discussion platform within WebCT:

> *'I personally have gained experience in debating in written form and thought about things I wouldn't have before by having the opportunity to read my peers experiences and responses to messages'.* [S6, G1]

Students also appreciated the opportunity to write reflections in a 'thoughtful' manner in the online environment. It was judged by students in all four focus groups that in comparison to instant chat type of communication, the unique text based feature of the asynchronous environment allowed time to digest and process the content and meaning of the messages that were posted in the student groups. Comments included:

> *'It was easier to write down reflections than say verbally, face-face with others in my group … they were often more open and honest'.* [S2, G2]

> *'I particularly liked that you had a chance to consider what you were going to say, rather than just saying it. I thought about my responses much more doing it that way'.* [S3, G4]

Further insight was gained from students in one of the focus groups who considered the discussions to provide an opportunity for developing critical reflection:

> *'Some comments that were made in the discussions showed that we were evaluating critically what we had experienced and learned ... so that was really great'.* [S5, G1]

Having a written record of the discussions to revisit was considered advantageous with regards to the reflective development of some students:

> *'It was really good to see other people's points of views and read the group discussions. You forget what you've said so easy! I liked being able to reflect on what I had said and others in the group whenever I wanted'*. [S2, G3]

Another favourable aspect students mentioned was that the online environment allowed for different styles of communication amongst the groups. For example students in one focus group commented that the online discussion forum was viewed as a supportive environment for those students who appeared less confident than others in taking part in group discussions [Focus Group 2]. As one student openly disclosed:

> *'It felt easier for me to join in the discussions on line than face-face if I'm honest. It was like a 'non-confrontational' way of sharing opinions in the group … and I liked it'.* [S4, G1]

Evidence to support this was seen in the type of revelations from student message postings within the discussion forums. For example difficult situations students encountered in their clinical environments. Recognising that other students had experienced similar learning situations, and moreover having the opportunity to share those experiences, was viewed as a critical aspect of the online discussions. Extracts of such examples are given in Appendix D.

4.19.2 What Students Disliked About the Online Environment

One of the limitations of the online discussions as cited by students in all focus groups, was the 'unnatural flow' of the discussions or the 'artificial tone' that the discussions were felt to represent. This correlated with data gathered from the student interviews. Two of the focus groups expressed an irritation in keeping track of the student messages posted and a feeling of being 'overwhelmed' by the number of messages they had to read when they logged onto the WebCT platform after some time had lapsed [Focus Group 1,

2]. Students having information overload has been noted before as a foundation for fewer postings in online discussion forums (Chen et al. 2009).

> *'I felt that the online discussions were enforced when we could talk face-face with our peers and have fluent conversations rather than disjointed messages on the internet'.* [S2, G3]

Conversely however, frustration was expressed by all the groups at the low levels of contribution by some members of their groups. Some founded their own lack of motivation to engage in the online discussions to be based not only on the Facilitator, but on the non-participation of others. Several students felt that logging on to see if any messages had been posted in the discussion forums was 'time wasting'. Alongside this, one of the focus groups raised objection to the fact that the messages posted within WebCT were not anonymous, and not only showed the identification of the author of the message but the time of posting the message [Focus Group 4]. As one student commented:

> *'Sometimes you feel like you've got to agree with everything and you can't really say what you think ... because it's not anonymous is it? You can see who's posted what and when!*' [S3, G3]

4.19.3 What Students Thought Could Be Improved About the Online Environment

The suggested improvements for the online discussions were largely linked to technical aspects of the WebCT platform, rather than the milieu of the learning environment itself. One enhancement recommended by students was having an electronic alert facility when other members of the group had posted a new message on to the discussion forum. This many students felt, would alleviate the 'tedious logging on' to different platforms as students often described to see if any messages had been recently posted. However, this was a specific limitation of the online learning platform that was used at the time of this study.

'I felt it [WebCT] was a useful resource, but it could do with being more interactive and being shared with other environments we use'. [S1, G3]

Furthermore the WebCT online environment was independent from MedLea the virtual online learning environment specifically used by the students in this study for communication and resources associated with their undergraduate medical studies. Synergy between the different interfaces of the online environments students were expected to use was raised as an important issue in three of the focus groups. Similarly links to external environments and social utility sites that students regularly used such as Face Book (www.Facebook.com) were viewed as significant for improving the overall online learning experience of students [Focus Group 1, 3, 4].

4.20 Theme 3: Professionalism Discussion Activities

4.20.1 What Students Liked About the Professionalism Discussion Activities

Students in all four focus groups commented that the online discussion activities set on issues of professionalism were constructive for their medical learning and reflective, professional development. The opportunity to view other student's opinions and share learning experiences in this respect was considered advantageous by all of the groups. The variety of descriptions students offered of the discussion activities included 'interesting', 'relevant' and 'thought provoking'. As two students commented:

'Doing the discussion activities with peers definitely made me think about the way in which I perform as a student. It made me think about the way I act in front of patients as well… so that was quite good'. [S1, G4]

'I have personally gained experience in debating in written form from these tasks and have thought about things I wouldn't have before by having the opportunity to read my peers experiences and respond to messages'. [S5, G3]

The flexibility offered by the nature of the asynchronous environment in which the discussions took place offered what students considered to be a ‘more reflective, rather than spontaneous’ opportunity for dialogue with their peers. The immediacy of the asynchronous social online dialogue was viewed as a valuable window to observe and learn from other perspectives. Appreciating the value of reading the opinion of others, sharing experiences and challenging or supporting views was a prevalent view amongst students. Students may have identified with such processes because of their familiarity with problem based learning methods as followed on the undergraduate medical programme. However, whilst many appreciated the opportunity to share experiences and reflect with their peers, as oppose to Clinical Mentors or Tutors, there was often sensitivity, or rather vulnerability expressed when being truthful about opinions or clinical experiences. This was interesting, as it conflicted with the practice of regularly sharing opinions in face-face learning tutorials, such as the students in this study regularly attended.

All four groups commented on the advantage of being able to download material from the online discussions for dialogue with their Clinical Mentors during their portfolio reviews. In particular comments were focused on the group activity aimed at sharing ‘good and bad’ examples of professionalism students had experienced on their clinical placements. One group highlighted that the discussion activities had encouraged them to discuss significant issues they had previously not thought about such as ‘whistle blowing’ and the ‘hidden curriculum’, both important aspects of medical education as highlighted by the GMC (GMC, 2009), [Focus Group 4].

4.20.2 What Students Disliked About the Professionalism Discussion Activities

A lack of guidance for the discussion activities was mentioned as an issue for students in two of the focus group discussions [Focus Group 1, 2]. This was in terms of clear objectives for the discussion activities set for the two academic periods explored. Students in these groups revealed that because the objectives were not explicit enough for them, the groups struggled to

instigate initial discussion. However, conversely two groups highlighted what they saw as the 'forced' nature of the discussion activities by being asked to discuss pre-defined topic areas [Focus Group 2, 3].

> *'I'd like to have just talked about anything and everything really. I felt I had to keep looking back at the topic areas and make sure what I was discussing was relevant to the task rather than me somehow'*. [S6, G1]

This issue of the participating in the activities was interrelated to the matter raised of discussions not being observed by a Tutor. It was commented that the lack of Tutor input resulted in students having 'no incentive' to contribute to these activities as they were not part of their structured curriculum and furthermore were not assessed. Undertaking assessment of discussions was suggested by all groups to be an important enhancement for the future group discussions, or as one group summarised the activities would otherwise simply be seen as 'another hoop to jump through' [Focus Group 2]. As one student explained:

> *'It's like being at school and you've got homework and you must have a minimum of this and a minimum of that ... it's sort of 'tick boxes' you into doing the work ... and it's frustrating when you log on and can't join any discussions anyway 'cos nobody else has logged on'.* [S4, G2]

4.20.3 What Students Thought Could Be Improved About the Professionalism Discussion Activities

It was interesting to note the sense from some students of wanting the online discussions to be facilitated by someone other than the Student Peer Facilitators. In this context students suggested a preference for a Clinical Mentor, Tutor or even medical students in the year above. As raised in the student interviews, the lack of Tutor input monitoring the contributions within the discussions was viewed by all focus groups as a limitation. Tutors and Clinical Mentors were not given access to the discussion forums in this instance, yet all groups felt that this may have encouraged greater participation by students within the groups:

> *'There didn't seem to be any consistency in the Facilitators. Ours wasn't very good, but other groups I spoke to had really good ones. I think in future a Tutor should check the contributions and the Facilitator.*' [S1, G1]

This however, contrasted with students' previous comments that emphasised the importance of creating a comfortable setting for interaction amongst their peers in order to share ideas and debate topics of interest, and furthermore the sense of trust described in sharing ideas and personal thoughts with other members of their groups [Focus groups 2, 3, 4].

A further point made by students in the focus groups was that though they recognised there were some of them who wished to participate in the online discussions more than others, many students needed an incentive to participate in the discussion activities. As such students viewed it was critical for the Facilitator and Tutors to succinctly set out each of the discussion tasks for the groups in order to facilitate as much discussion as possible amongst the students [Focus groups 2, 3, 4]. One student summarised this point:

> *'Because the discussions were not assessed by anyone, it was really hard for us to think "Right I need to go and contribute to the online discussions". You just have so many other things you have to do, you prioritise'.* [S2,G4]

4.21 Discussion of Findings from Focus Groups

Findings to emerge from the final part of this case study confirmed that students found sharing experiences with their peers valuable and helped to build aspects of their personal and professional development. Learners are not a homogenous group; they have different levels of intrinsic motivation and responses to extrinsic factors. Recognition that motivation is not just an individual activity, but that it is socially situated and influenced by diverse factors within a learning environment was crucial to the understanding of the online learning communities that were explored here. Incorporating strategies for improving motivation, interaction and the social dynamics amongst the groups was an important consideration for future success. This in turn, proved to be an efficient method of reinforcing the objectives as outlined in the GMC's Guidance (GMC, 2009). However, in conjunction with the questionnaires and interview data, students from all focus groups acknowledged several challenges for participation and engagement in the online discussions. Common threads throughout all the focus groups were having a clear purpose for the role of a Student Peer Facilitator, recognising acceptance and expectations of the learners involved and the importance of a 'Tutor' presence in the online discussions.

The most significant themes drawn from this analysis are summarised below:

- Motivation (both intrinsic and extrinsic) to contribute to the online discussions was perceived as crucial by students. This was linked to the skills and attributes of the Student Peer Facilitator; group participation; student incentives to contribute to the discussions and complex timetables and schedules. In this respect, the issue of hierarchy of the Student Peer Facilitators was viewed as important.

- The importance of the role of the Student Peer Facilitator was emphasised by students. Better preparation and guidance to face the various challenges experienced when encouraging peers to engage in the online discussions was viewed as significant. Providing

constructive feedback on the performance of the Student Peer Facilitators was suggested as useful practice by Student Peer Facilitators and other students.

- Although Tutor presence was not ranked in the top five priorities within any of the focus groups, it emerged as an important consideration in the group discussions. This was in terms of facilitating the discussions; assessing individual contributions to the discussions and supporting the Facilitator's role. Whilst some students expressed Tutor presence as important, equally others acknowledged the less intimidating atmosphere when sharing experiences and discussing clinical encounters with their peers rather than Tutors. This was in terms of developing confidence and the promotion of reflection.

- The structure of the asynchronous discussions was noted to sometimes inhibit spontaneity and opportunities to engage in face-face dialogue amongst students. In addition, synergising learning platforms used by students throughout their learning programme was perceived as beneficial to student learning in terms of access and convenience.

A synthesised discussion of the implications from these findings is presented in Chapter 6.

4.22 Chapter Summary

This chapter has examined findings derived from data collected through a mixture of questionnaire, interview and focus group methods. The discussion has centred on insights gained from medical students on using Student Peer Facilitators for their online asynchronous discussion activities. Key findings to emerge were that students found the role of the Student Peer Facilitator to be beneficial and add value to their learning agenda. This was associated with promoting reflective thinking and discussion amongst the student groups. Similarities between these findings and other studies that have investigated students' satisfaction in asynchronous online environments were found in terms of the usefulness of the online environments for collaborative work and processing experiences both positive and negative (Sutton, 2001; Driver, 2002). However, for Student Peer Facilitators to create an effective online learning environment certain conditions emerged as necessary that are worthy of consideration.

A community of learners within an asynchronous learning environment has common features similar to any other community; namely, to provide social interaction, communication and information exchange. However, certain factors beyond the Facilitators control such as the personalities and learning styles of the students within the discussion groups appeared important. Building on this the appropriate training of the Student Peer Facilitators was also a significant consideration for the success of an online community of discussion.

Motivation and interactivity are noted by many educational theorists as fundamental to creating a learning community (Wenger et al. 2002). Vesely et al. (2007) highlight the importance of recognising a student's desire to become part of a community as opposed to simply accessing course material. It was stressed by students in this study that the key to developing the online discussions was having motivation to participate at the outset. Students' perceived enthusiasm of a Facilitator has been previously observed to be a motivating factor for participation in online discussions

(Oliver and Shaw, 2003). Furthermore, building a community in the online environment was perceived by some students to be influenced by the lack of non-visual clues and the nature of written language. In classroom based, face-face settings student interaction relies on oral communication, whereas in the online environment their communication relies primarily on the written word and is built on other contributions to deepen inquiry, analysis, critique and discussion. In order to strengthen communication amongst a community of inquiry, and for learners to benefit effectively from a collaborative environment facilitated by peers, there may be a need for a shift in the skills and training of Facilitators. A connection and clear purpose of the role and activities set between the Facilitator and other students, and an understanding of the differing context and needs of the learners was viewed as an essential aspect of introducing the role by the students in this study. Figure 23 illustrates the emerging conceptual model based on findings at this stage of the research study.

For practical reasons it was not possible to repeat the data collection processes undertaken in this case study throughout the second year of this research. However, a different perspective of using the Student Peer Facilitators was explored through examining the online discussion forums, specifically the impact of incorporating e-moderating skills into the training of the Student Peer Facilitators.

The following chapter now presents Case Study 2 which focused on these examinations from a selected number of student groups from both years of the study.

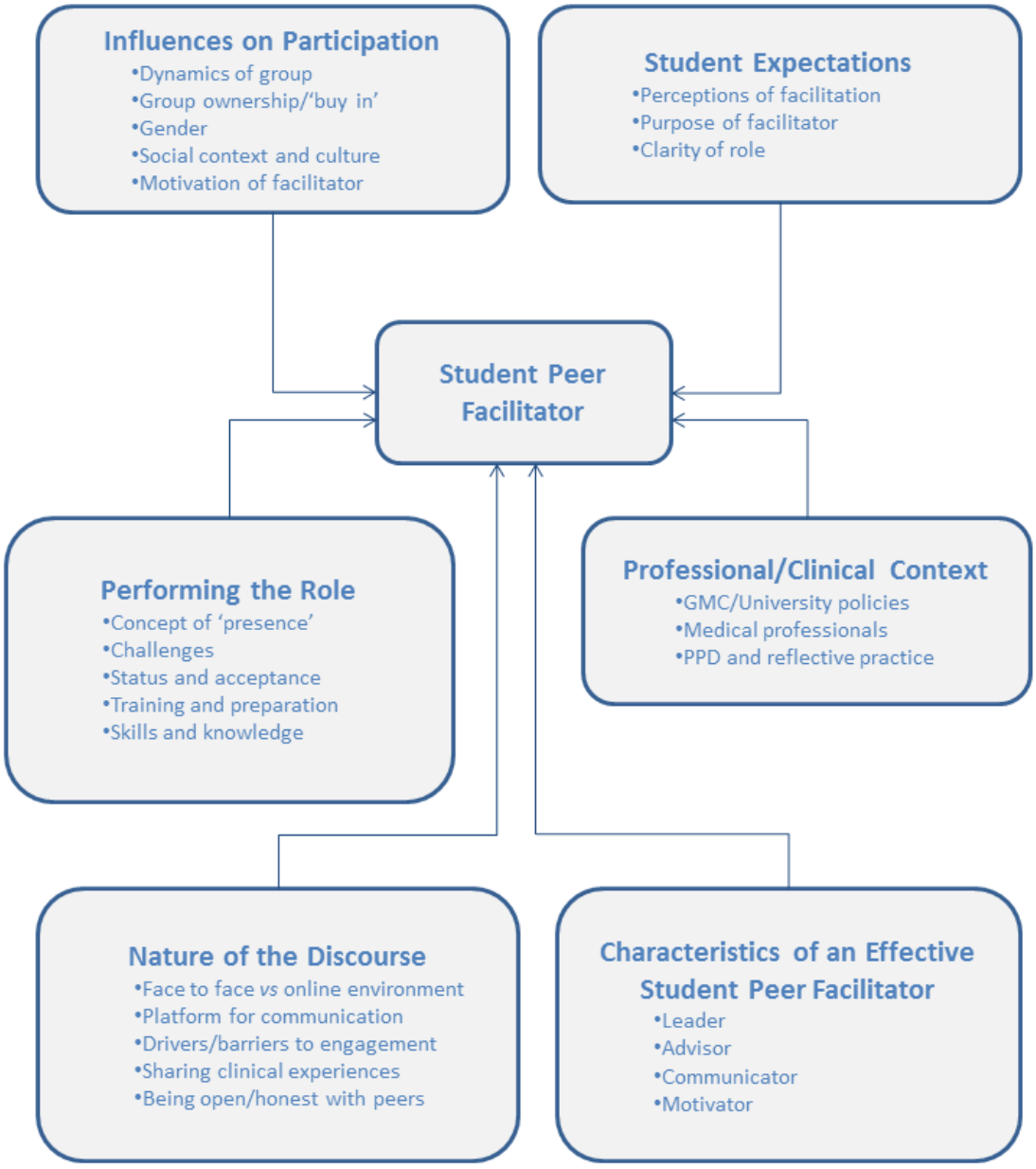

Figure 23: Emerging Conceptual Model of Study

Chapter 5 : Findings from Case Study 2

5.1 Overview

This chapter will discuss the second phase of the study presented as Case Study 2. In order to gain a different viewpoint of using Student Peer Facilitators, this case study focused specifically on examining and comparing the text output amongst a sample number of student groups in the first and second year of the study. The first part of this chapter will present comparisons of student contributions using the Community of Inquiry model. The second part will present comparisons with the specially devised coding framework together with an exploration of student contributions by gender. The final part of the chapter will present a discussion on the implications of these different explorations.

5.2 Restatement of Research Aims

The overall research aim of this study was to obtain a conceptual understanding of using Student Peer Facilitators for asynchronous online discussion to enhance reflective practice in a medical education context. The specific aims of this case study were to develop this understanding through exploring the amended training of the Student Peer Facilitators on the development of the online discussions. The impact of the gender of students on the online discussions and the nature of facilitation within the discussions was also explored together with the broader issues for educational practice as described in Research Aims 3, 4 and 5.

5.3 Descriptive Data

Supplementary data available from the WebCT system indicated that 97% (61 out of 63) of the student groups in the first year of the study participated in the online discussions. In the second year, this increased to 100% of the student groups participating in the discussions. Statistical information on

individual contributions to the discussions showed that 81% (383 out of 473) of students in the first year, and 87% (393 out of 452) in the second, contributed to the discussions. Figure 24 shows an overview of the total number of message postings from student groups in both years.

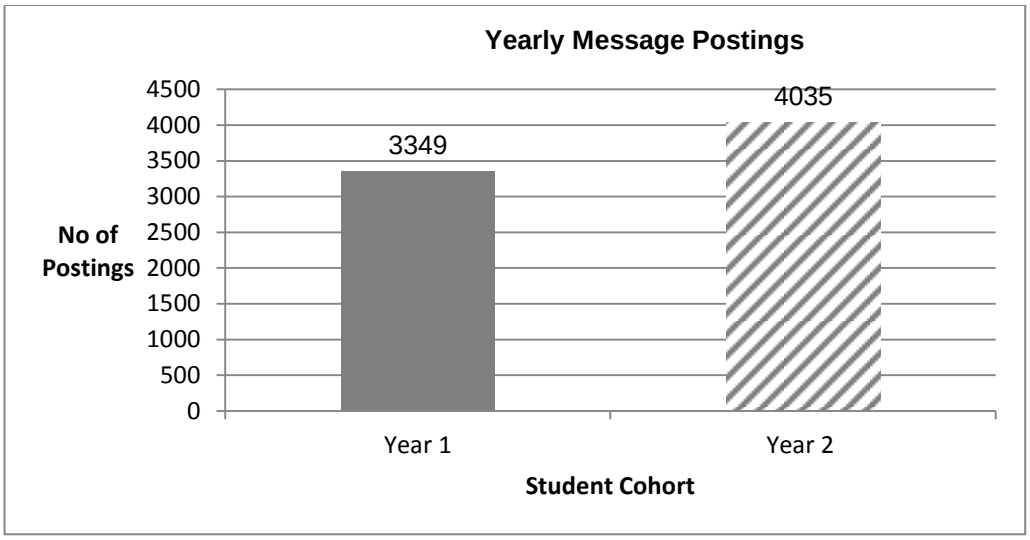

Figure 24: Total Number of Postings to Discussions (Year One and Two)

The average number of messages posted during one month by the student groups in both years is illustrated in Figure 25. Further details of the implementation of the online discussions are provided in Chapter 3 (Section 3.6).

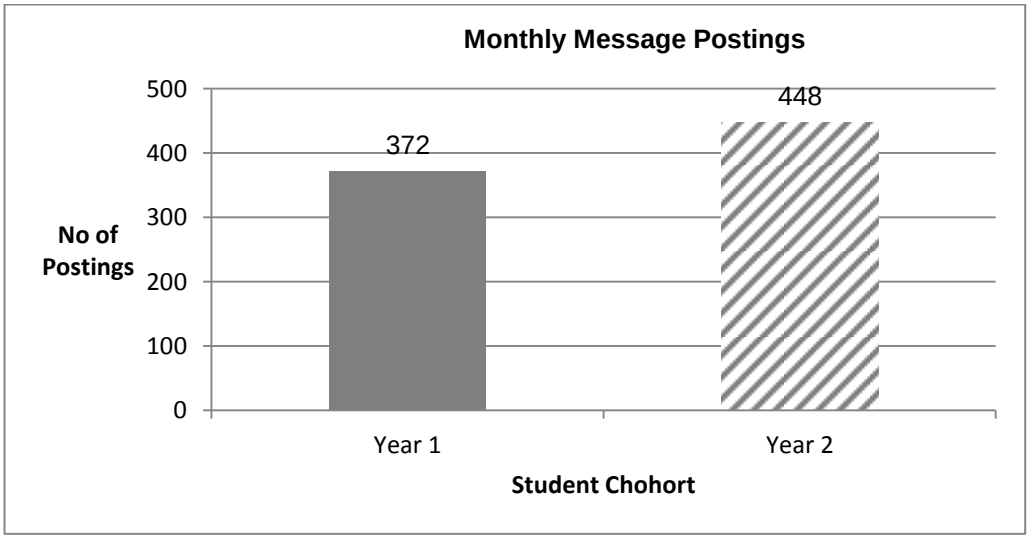

Figure 25: Average Monthly Postings to Discussions (Year One and Two)

5.3.1 Logging on to the Online Discussions

A twenty four hour period in March during the first year was selected to examine the frequency of student contributions to the online discussions. The month of March was chosen because it was the middle point of the academic year. This revealed that the most active time students visited the discussions was at 17.00 hrs. with an increase at 13.00 hrs., 15.00 hrs. and 19.00 hrs. respectively. During the period of one day, peak use of the discussion forums was between 11.00 hrs. and 23.00 hrs., although some contributions were posted up to 4.00 hrs. in the early hours and others began at 7.00 hrs. It is worth noting here, that 'participation' within the forums is described as posting a message onto the discussion forums. However, not all visits made to the webpage resulted in a message posting. Such practice is often referred to in the literature as 'lurking'. Sutton (2001:227) provides a succinct description of a lurker as 'a person who absorbs and processes an observed interaction between others'. Such learners are thought to visit online communities to satisfy information needs rather than social needs, and tend to observe rather than participate in online discussion (Dennen, 2008; Hellsten et al. 2011). In this instance a student 'visit' did not distinguish between students who 'lurked' and students who 'participated'. Figure 26 shows the distribution of student visits during the period explored.

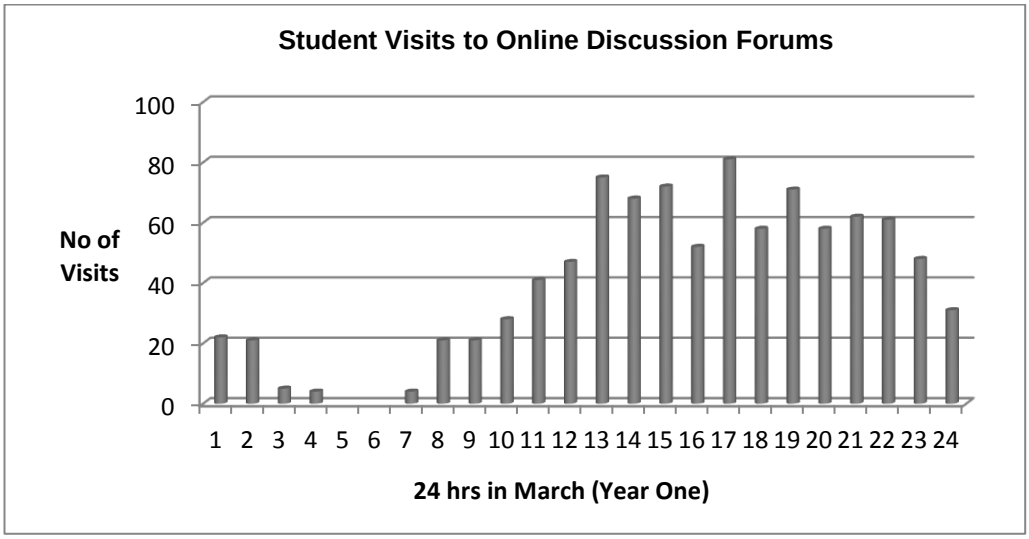

Figure 26: Student Visits to WebCT Discussions within a 24 hour Period

5.4 Content of Online Discussions

In both years of the study group discussion activities were set for the Year 3 cohort at the beginning of the academic year. The sub-topics amongst the groups during the two years did not differ significantly. Although the content of the students' discussions was not part of the original aims of this study, they were nonetheless an interesting consequence and field notes and observations were made during both years. A large proportion of messages posted within the discussions portrayed students critically reflecting upon what they perceived to be 'good' 'and 'bad' medical and ethical practice. The most popular discussion topics were 'professional code of conduct', 'codes of conduct applied to medical students in practice'; 'good medical practice and ethics'; 'poor practice observed by clinicians'; 'whistle blowing' and 'the hidden curriculum'. Reflective discussions occurred less on the latter two topics ('whistle blowing' and 'the hidden curriculum') than other subjects. This may have been influenced by the fact that at the time of this study these subjects were not formally taught on the undergraduate curriculum, rather attributes that students developed implicitly from their clinical work based experiences (Halbach et al. 2005). Alternatively because the hidden curriculum is 'hidden' by definition, it may that that at the time of this study student participants were not experienced enough in their clinical training to recognise when these occurred or when values conveyed to them conflicted with their own, as observed in other studies (Phillips, 2013).

5.5 Component 1 – Community of Inquiry Model

As described in Chapter 3, the Community of Inquiry model devised by Garrison et al. (2000) was employed for the first analysis on the online discussions amongst the sample student groups. A detailed description of the elements of the Community of Inquiry model and the rationale and processes the instrument is described in Chapter 3 (Section 3.29).

5.6 Selection of Online Groups for Comparison with Community of Inquiry Model

The ultimate goal of developing asynchronous discussion forums is considered to be one that creates an online learning environment that will achieve high levels of learning (Andresen, 2009). One way of assessing whether this has transpired or not is to examine the levels of learning reached using an appropriate methodology. Using the Community of Inquiry model comparisons were made between the discussion texts from student groups selected from the first year of the study to the second (i.e. pre and post-amended training of the Student Peer Facilitators), with the specific intention of identifying changes in the cognitive development of the groups. Previous research on Cognitive Presence has found that inquiry in online discussion rarely moves beyond the exploration phase (Garrison and Anderson, 2003; Meyer, 2004; Murphy, 2004).

As described in Chapter 3 (Section 3.27) twenty sample groups were randomly selected to represent each of the four Teaching Hospital sites where students were educationally based. The proportion of entries from within the groups was fairly distributed between all four sites. The highest entries were from groups based at Hospital C in both years of the study. No particular explanation was found for this. Hospital A had a smaller number of message postings, but this Teaching site had less student allocations. Figure 27 and Figure 28 show the distribution of entries amongst the sample groups that were examined.

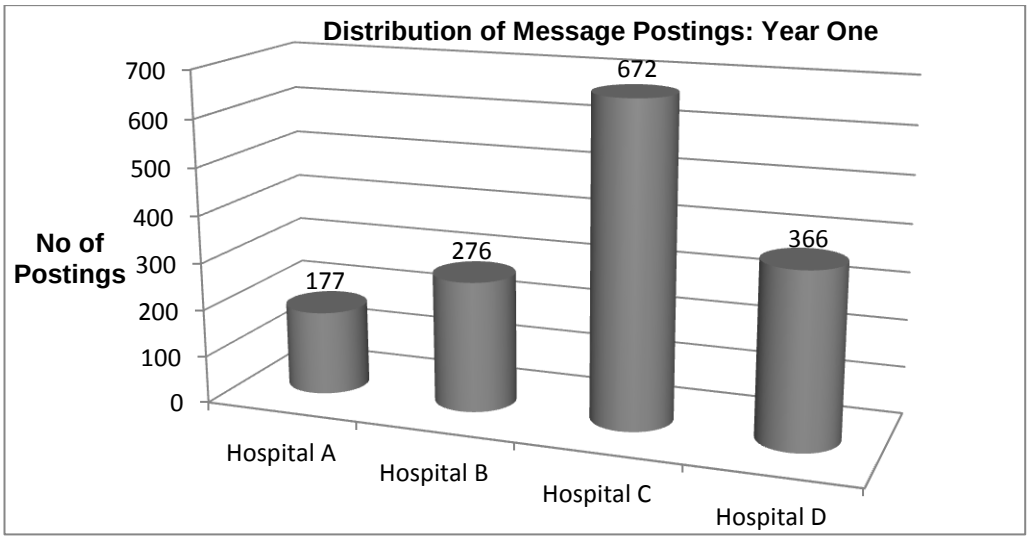

Figure 27: Distribution of Message Postings across Teaching Sites (Year One)

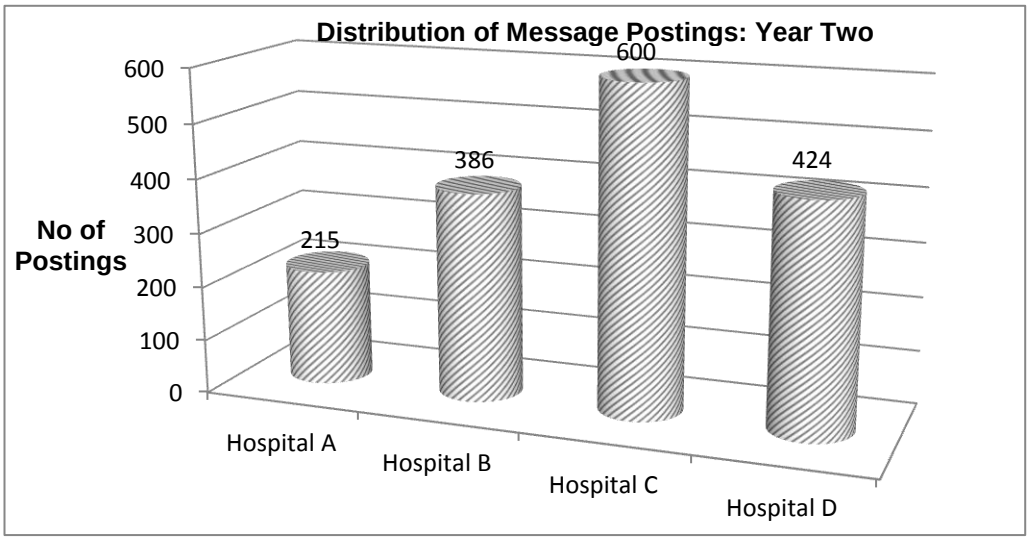

Figure 28: Distribution of Message Postings across Teaching Sites (Year Two)

The next section describes examination of the three presences in the Community of Inquiry model, namely Cognitive, Social and Teacher Presence in the sample discussions that were investigated.

5.7 Analysis of Community of Inquiry Levels in the Online Discussions

In comparing the three presences of the Community of Inquiry model, the percentage of all participants' contributions assigned to each category of Cognitive, Social and Tutor presence were first calculated. The data from both years were compared by Independent t-tests using SPSS statistical 16.0 software. Comparison of the results from the first year to those from the second showed that all categories differed significantly in the Cognitive Presence element, but only 'group collaboration' and 'direct instruction' were significantly different in the Social and Tutor presence categories respectively ** $p<0.01$ and * $p<0.05$ (Figures 31-34). Each of these is now discussed in turn.

5.7.1 Cognitive Presence Comparisons

In line with the focus of the Community of Inquiry model only the complete responses of individual students were used as a unit of analysis, ranging from one sentence to a paragraph in length. The most widespread differences observed within the data obtained related to Cognitive presence. In the first year, the highest proportions of texts were in the 'triggers' (CE) and 'exploration' (CTE) categories (37% and 51% respectively) as described by the Cognitive presence element of the model. There were far fewer messages identified at the other higher levels of 'integration and resolution' within this presence.

However, in the second year, the proportion of texts in the 'triggers' and 'exploration' categories of the Community of Inquiry model were markedly lower, in the groups that were sampled. Equally, percentages in the 'integration' and 'resolution' categories (39% and 20% respectively) were significantly higher in the second year than in the first. This would indicate a shift from student contributions at the lower level components of the Cognitive Presence to those at a higher level in the second year (i.e. after the amended training had taken place). Figure 29 and Figure 30 show the

comparisons of discussions in relation to the Cognitive Presence category of the model. Data are expressed as a percentage of the total contributions in each presence assigned to this category.

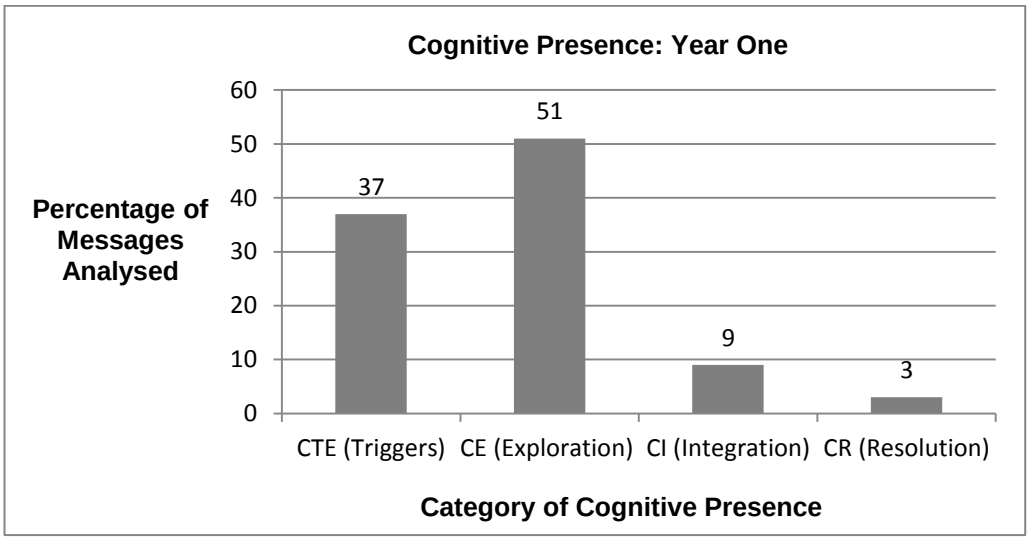

Figure 29: Cognitive Presence Analysis of Discussions (Year One)

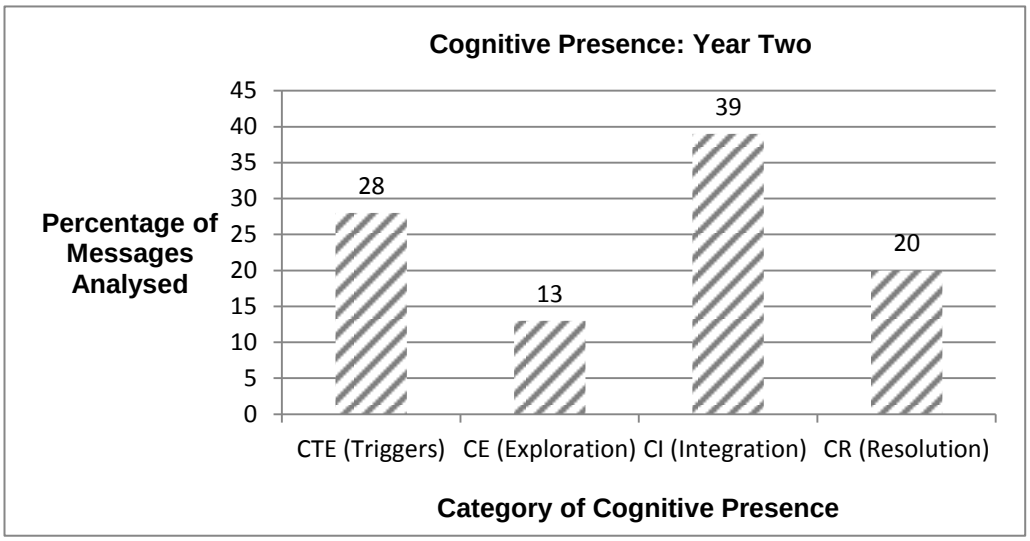

Figure 30: Cognitive Presence Analysis of Discussions (Year Two)

5.7.2 Social Presence Comparisons

In the original template of the Community of Inquiry model, ‘group cohesion’ is identified as the third component of the Social presence element. On preliminary analysis of the discussion texts however, cohesion was seen to infer that differences of opinion amongst the group were ‘accepted’ or

'resolved'. However, although agreement was not always apparent in the discussions explored here, there was still evidence of 'collaboration' amongst the groups. For this reason 'group collaboration' was felt to be a more appropriate descriptor for this type of interaction and messages coded throughout subsequent analysis were then given this descriptor.

When comparisons of discussion texts were made with the Social presence category of the model, in the first year these were evenly spread between the three components of the presence. In the following year however, there were small changes in proportions of texts in the categories of 'openness' and 'emotion' categories within the Social presence. The only statistically significant difference found was a small increase in percentage of texts that were classified as including evidence of 'group collaboration' (SGC) category (40%) in the second year which implied that the change in training for Facilitators may have enhanced the nature of the group cooperation in some way. Figure 31 and Figure 32 show the comparisons of discussion in relation to the Social Presence category of the model. Data are expressed as a percentage of the total contributions in each presence assigned to this category.

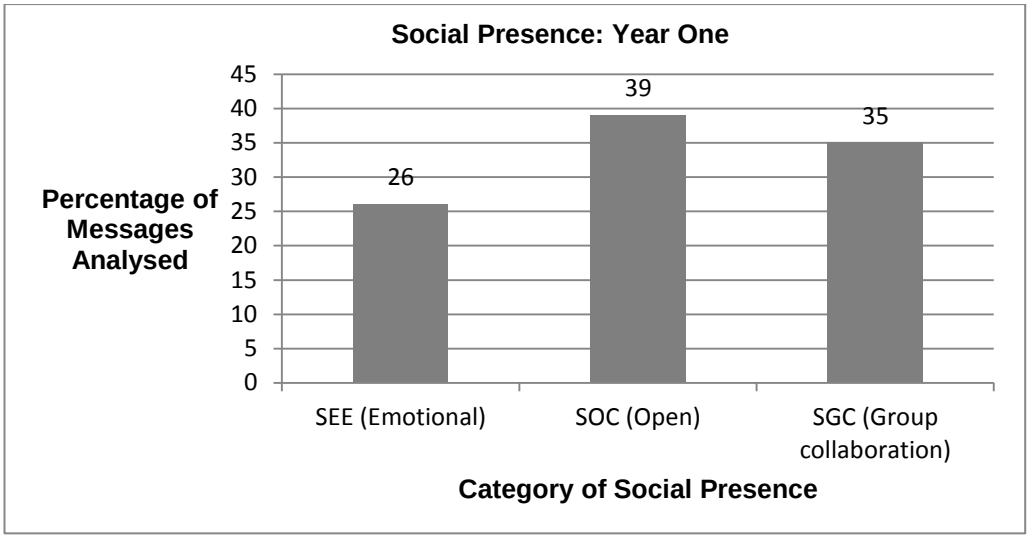

Figure 31: Social Presence Analysis of Discussions (Year One)

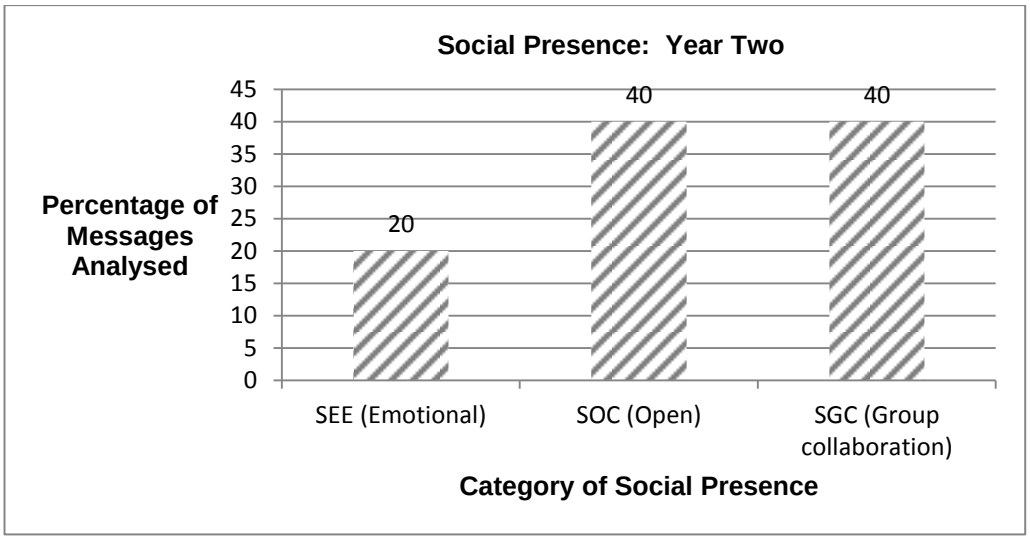

Figure 32: Social Presence Analysis of Discussions (Year Two)

5.7.3 Tutor Presence Comparisons

As discussed in Chapter 3, aspects of the 'Teacher Presence' category of the original Community of Inquiry model were not considered to match with what was actually taking place in the student discussions in this study and 'Tutor Presence' therefore was considered to be more suitable indicator for coding this aspect of the discussions. In contrasting the sample groups to the third presence of the model, comparisons showed that in the first year the highest proportion of contributions was in the 'Instructional Management' (TIM) category (47%). In the subsequent year however, there was a significant decrease in the percentage of contributions from Student Peer Facilitators at this lowest level category (28%).

However, although the proportion of the texts allocated to the other levels was higher in the second year, these differences were not statistically significant. Figure 33 and Figure 34 show the comparisons of discussion between both years in relation to the Tutor Presence category of the model. Data are expressed as a percentage of the total contributions in each presence assigned to this category.

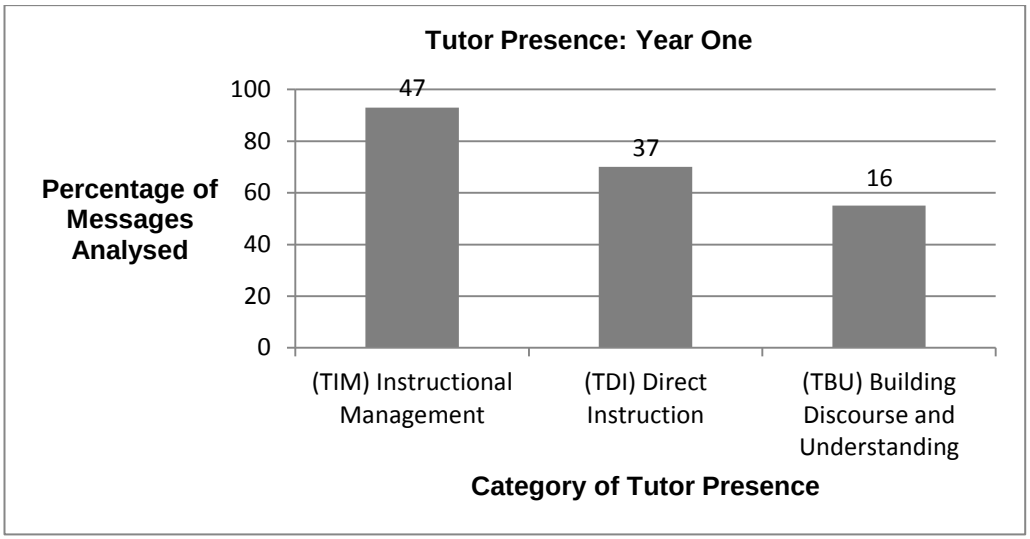

Figure 33: Tutor Presence Analysis of Discussions (Year One)

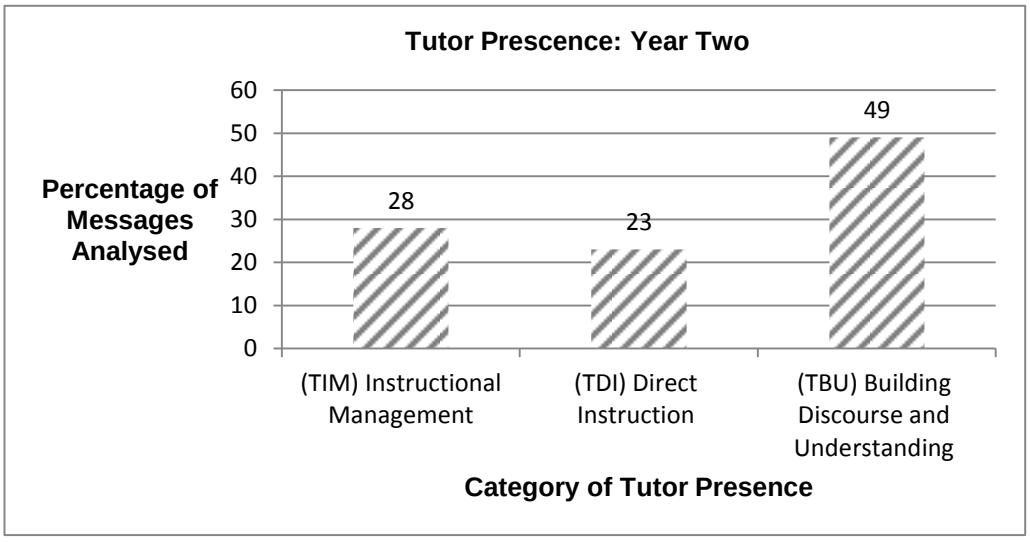

Figure 34: Tutor Presence Analysis of Discussions (Year Two)

5.8 Discussion of Community of Inquiry Levels in the Online Discussions

The Community of Inquiry model comparisons of the student discussions between the first and second year indicated that the Student Peer Facilitator presence may have influenced the quality of the group discussions. The higher levels of Cognitive Presence identified, inferred that the online discussions accustomed students to analysing their learning experiences in a manner conducive to their professional development. Due to the asynchronous nature of the online discussions used in this study, students were able to seek clarification from other sources (e.g. their peers), which in turn allowed for more in-depth discussion. This mutual engagement is consistent with the concept of 'shared repertoires' as described by Wenger (2000:208) in terms of interaction between experience and competence in a community of practice and meta-reasoning. Indeed, it was during analysis of samples from the second year, when e-moderating skills had been incorporated into the training of the Facilitators, that the most marked effects at the higher levels of Cognitive presence in the Community of Inquiry model were evident (Figure 29 and 30). This shift was apparent within those contributions which triggered initial discussions and those that clarified issues to be discussed.

The relatively small proportion of texts observed at the higher levels of the Cognitive Presence of the model before the introduction of the amended training, were found to be similar to those previously reported by Garrison and Anderson (2003). However, their study included far fewer participants than the current study and some of the discussions were student-led, and others were Tutor-led. Their report did also not indicate whether these groups had different outcomes, or indeed what training and preparation was provided for the student moderators or Tutors. The sample groups compared in this study revealed evidence of students connecting ideas, linking concepts, and resolving and analysing their proposed solutions to the issues raised within the group discussions. This indicated increased indicators of reflective and critical thinking, in terms of experiential learning for developing

different aspects of reflective practice and forming a professional identity, both important in medical education (Mamede and Schmidt, 2004; Cruess and Cruess, 2006). In turn this resulted in a higher level of cognitive entries being produced from the groups as a whole as they interacted effectively in a community of practice (Figure 30).

Implications to be drawn here highlighted the importance of training Facilitators for the online discussion activities. In a similar vein Sandars et al. (2007) published guidelines to aid the production of effective online discussions and advised that in order for discussions to be successful a Facilitator must be taught certain techniques. Such techniques he suggested are ensuring that discussions flow; having the tools in place to ask appropriate questions to allow for greater in-depth discussions; summarising discussions appropriately and knowing when to move onto the next topic. Sandars and Walsh (2004) also demonstrated in their study of clinicians in an online environment a preference by the users for a Facilitator presence in order to help guide the discussions. They suggested the Facilitator role can support other participants, which in turn stimulates them to interact further and ensure topics are covered in depth. Several of these techniques were covered in the amended training sessions of Facilitators in the second year. Implicit here perhaps is that the lower number of entries produced at the higher levels of the Community of Inquiry model in the first year was due to the Student Peer Facilitators having insufficient e-moderating skills for a more successful learning experience to ensue.

In comparisons made between the Social Presence categories of the model changes were manifested by an increase in evidence of ‘group collaboration’ (Figure 32). The augmented training of the Facilitators emphasised social awareness of the groups by encouraging participation, support for other group members and building a collaborative ethos within the discussions. As discussed in Chapter 3 (Section 3.28), the three aspects of the Social Presence are not regarded as a hierarchy (Garrison et al. 2000). Unlike the approach adopted by Murphy (2004), it recognises that expression of emotions, openness to contributions of others and group collaboration are

important for developing reflective learning online. Indications from the second year showed an increase in the level of openness within the student postings (Figure 32). Developing openness for reflection is something Mamede and Schmidt (2004) acknowledge as a critical aspect in gaining medical expertise. However, from the comparisons made during this part of the study this would seem to differ with Sandars et al's (2007) proposals that the Facilitator's role must alter from being a more social presence initially to a more assiduous one in order for collaborative learning to occur. Previous studies in the literature highlight the sense of a risk-free and comfortable atmosphere that student facilitated online discussions can often generate (Sargeant et al. 2006; Baran and Correia, 2009). This correlates with the levels of 'honesty' and 'openness' displayed amongst many of the messages that students' posted in the discussion forums in the two years examined during this study. Examples of this can be seen in Appendix D.

For the Tutor presence category of the Community of Inquiry model comparisons identified building discourse and understanding as the highest level and a decrease in 'direct instruction'. Observations indicated that there was a significant move away from the lowest instructional level of 'Tutor Presence' i.e. the proportion of contributions by student facilitators concerned with providing information regarding the task in the second year (Figure 34). De Smet et al. (2008) identify three roles for Peer Tutors namely 'motivators', 'informers' and 'knowledge constructors'. Taking their view, the contrasts in discussions between the first and second year suggest that the enhanced preparation and training of Facilitators enabled them to fulfil their 'instructor' role more efficiently, which in turn allowed them to develop in the manner described by De Smet and colleagues. Due to a greater understanding of what was expected in the online discussions, Facilitators were able to manage the discussions more effectively and in such a way that did not impinge on the learning experiences of other group members. This was evident first, from the increased levels of Building Discourse and Understanding and second, the decreased levels of Direct Instruction within the Tutor presence in the second year (Figure 34).

The next section will describe the second part of the analysis of the sample online group discussions which involved using a purposely devised coding framework to explore a different aspect of the discussions.

5.9 Component 2 – The Coding Framework

During analysis of the discussions using the Community of Inquiry model, it was evident that within some groups in the second year, responses to students who initiated the discussions appeared more 'prompt'. Rourke and Anderson (2002a) noted a similar finding in their study when they explored the presence of peer facilitators in an online discussion environment. Once the discussion was initiated by a Student Peer Facilitator, students other than those who had received training appeared to facilitate the online interchanges more regularly in the second year. Examples of these were from contributions that followed on from postings by the Student Peer Facilitator, which initiated the original discussion. As no existing data coding guidelines were found to be suitable for this part of the investigation, specific coding guidelines were developed to undertake this analysis. The specific elements of this coding framework are described in detail in Chapter 3 (Section 3.31).

5.10 Selection of Online Groups for Comparison with Coding Framework

A sub-set of student groups from the original sample of twenty (n=8/per year) were randomly selected through methods illustrated in Chapter 3 (Table 27). These were not the same student group numbers as the previous analysis. To substantiate the data coding guidelines, discussion threads were defined as sequences of exchanges between two or more students and were used as the unit of analysis for these investigations (Schrire, 2006). Comparisons of discussion threads between the first and second year were then analysed for responses to initiation of discussions and evidence of general facilitation of discussions.

The threads generated in these groups for both years (*n*=57 and 143 threads, respectively) were analysed in two ways. First, the proportion of discussion threads initiated by Student Peer Facilitators and other group members that had an immediate reply, or required extra postings, to elicit responses was ascertained. A code letter of A-D was assigned to entries in the discussions to specify 'Indicators for Triggering Events'. Second, by identifying key phrases from the texts, the proportion of threads in which group members, other than Student Peer Facilitators, facilitated group discussions was also determined to see if this differed between the two years. The percentage of threads identified by these criteria from the first year was then compared to that from the second.

A numbered scoring of 0-2 was then assigned to entries in the discussion to indicate the 'Nature of Facilitation'. Both sets of criteria were tested on threads from four pilot groups (one from each of the Teaching Hospital sites) with the remaining twelve groups subsequently analysed. Table 26 and Table 27 show a breakdown of measures within the groups and the coding categories that were allocated in both years of the study.

Student Group No.	University Teaching Site	Gender of Facilitator	Codes A-D	Codes 0-2
3	Hospital A	Female	A	0
9	Hospital A	Female	A	0
18	Hospital B	Male	D	0
24	Hospital B	Female	A	1
39	Hospital C	Female	B	0
42	Hospital C	Female	C	2
57	Hospital D	Female	A	0
63	Hospital D	Male	B	0

Table 26: Analysis of Coding Discussion Groups with Coding Framework (Year One)

Student Group No.	University Teaching Site	Gender of Facilitator	Codes A-D	Codes 0-2
6	Hospital A	Female	A	0
9	Hospital A	Male	C	0
18	Hospital B	Female	A	0
27	Hospital B	Female	B	0
42	Hospital C	Female	A	0
45	Hospital C	Female	A	0
51	Hospital D	Male	A	0
63	Hospital D	Female	A	0

Table 27: Analysis of Coding Discussion Groups with Coding Framework (Year Two)

5.11 Analysis of Findings from the Coding Framework

Comparisons of discussion threads between the first and second year showed in the first coding classification 'Categories of Discussions Threads' demonstrated by assigned codes A-D of the framework, that a similar proportion of threads were initiated by Student Peer Facilitators. However, the proportion of discussions which required two or more postings by Student Peer Facilitators to elicit a response was markedly lower in the second year. Using Mann-Whitney U tests, Code B 'Discussion started by SF and trigger took more than two postings to establish interaction from group' showed a significant reduction in the second year ($p=<0.001$) whereas Code C 'Discussion started by non SF and trigger initiated immediate interaction from group' showed a significant increase in the second year ($p= <0.008$). Furthermore, the percentage of discussions initiated by non-Facilitators, to which there was an immediate response, was significantly higher in the first year when compared to that of the second year.

Within the second classification of coding 'Levels of Facilitation in Threads' the proportion of threads in which there was no evidence of facilitation by students not trained as Student Peer Facilitators, was lower in the second year than in the first. In addition to this, the percentages of threads in which there was evidence for facilitating discussions by either one or two, or more than two such students was significantly higher in the second year than in the previous year. Similar to the first stage of coding analysis, using Mann-Whitney U[1] tests the proportion of texts at level 0 was shown as lower, while those at levels 1 and 2 were higher in the second year than in the previous year ($p<0.001$).

Table 28 shows these comparisons. Data are shown as percentage of total threads analysed and the numbers are shown in parentheses.

[1] Mann Whitney U tests were used because of their suitability to compare the rankings of coding

Year of Study	No. of Threads Analysed	Categories of Discussion Threads				Levels of Facilitation in Threads		
		A SF starts discussion - immediate response % (n)	B SF starts discussion - >2 postings for response % (n)	C non SF starts discussion - immediate response	D non SF starts discussion - >2 postings for response	0 No facilitation by non SFs	1 Little evidence for facilitation by non SFs	2 Significant evidence for facilitation by non SFs
One	157	17 (26)	18 (28)	57 (90)	8 (13)	73 (114)	13 (21)	14 (22)
Two	143	15 (21)	4 (6)	72 (103)	9 (15)	59 (41)	28 (40)	31 (44)

Table 28: Comparison of Threads for Response to Initiation of Discussions and Evidence of Facilitation

5.12 Discussion of Online Discussions using the Coding Framework

Undertaking further comparisons of the online discussions by means of the devised coding framework provided further evidence of enhanced participation from students after the amended training of Facilitators had taken place. Analysis of discussions in this respect demonstrated differences in the nature of the facilitation and the moderating behaviour of both Student Peer Facilitators and non-Facilitators within the student groups. Evidence for this was drawn from two aspects of the analysis.

First, a significant change was found in the pattern of responses by group members to those who had initiated the discussion topics. There were a higher proportion of threads where Student Peer Facilitators required fewer initial prompts to elicit responses from other group members, i.e. they responded more promptly to initial postings and were evident within discussions initiated by non-Facilitators (Table 29). Other authors have discussed the importance of the Facilitator role to initiate and develop discussion in order for an educational experience to be successful (Garrison et al, 2000; Buelens et al. 2007). Findings drawn here supported earlier analysis from the Community of Inquiry model that inferred the amended training for Facilitators was influential in the type of interactions and collaboration that took place amongst the groups. They were also consistent with studies that suggest students are able to promote participation in online discussions better when they have developed their own online facilitation techniques (Hew and Cheung, 2008). However, these investigations included far fewer participants than this study, and did not investigate the pattern of responses to the Facilitators as undertaken in the context of this research.

Second, analysis of the content of the threads explored in the second year demonstrated that a higher proportion of contributions from students who were not trained as Facilitators, used e-moderating techniques and language, similar to that used by the Facilitators themselves. This was seen in the

positive correlation demonstrated between the opening statement by Student Peer Facilitators and the immediate response from the group members for further ongoing discussion (Table 28). Guldberg and Pilkington, (2007) emphasised that the first phase of a Facilitator's role in an online environment should be that of welcoming and affirmation in order for an effective online discussion to ensue. In the sample discussions explored incorporating such strategies into opening statements made by Facilitators seemed to provide a solid base for other students to respond to the discussions, thus providing them with the opportunity to discuss their experiences in relation to the opening statement. Examples of this were demonstrated in the higher levels of facilitation made by other members of the group to the ongoing discussions (Table 28). In such instances, once discussions were initiated the Facilitator then took responsibility to ensure this continued by developing their role further to maintain the discussion and acknowledged entries made by other students. This in turn stimulated other students to adopt such behaviour and promote responsibility as observed in other studies (Maudsley and Strivens, 2001; Stodel et al. 2006; Buelens et al. 2007). From these investigations the issue of contributions by gender was further highlighted.

The following section will now describe examination of gender contributions in the sample discussions explored from both years of the study. Details of the specific methods used to undertake this analysis are described in Chapter 3 (Section 3.36).

5.13 Selection of Online Groups for Comparing Gender Contributions

Numerous authors suggest that within online environments contributions from male participants are sometimes less than female participants (Bostock and Lizhi, 2005; Caspi et al. 2008). From analysis of the original sample discussion groups it was noticeable that differences appeared in the involvement of students according to gender. This correlated with implications drawn from data that was examined throughout Case Study 1. In order to explore this concept further, a comparison of contributions by gender was therefore made between sample groups in the first and second year of this study.

The gender of the Facilitators for each of the groups was initially identified by database and statistical information available from the WebCT platform. Subsequently for both years, contributions by male students to the discussions were compared to female students in two ways. First the percentage of contributions by males and females to all discussions was compared to the proportion of males and females in the whole of the third year student cohort in the first and second year. Second from this, the proportion of male students who contributed to the discussions was then compared to that of female students who contributed within both years. From this evaluation there was a similar male: female ratio of third year medical students with 37% males and 63% females in the first year, and 43% males and 57% females in the second year.

5.14 Analysis of Comparing Gender Contributions

Within these sample student groups 68% (46 out of 63) males and 86% (90 out of 105) females from the first year contributed to the online discussions. This was demonstrated by comparing the proportion of males who contributed to that of females. Interestingly however, in the second year the proportion of contributions to the online discussions by male students

increased somewhat. Comparisons showed that within the sample groups 90% (64 out of 71) males and 88% females (84 out of 95) took part in the discussions. Tests undertaken indicated that the proportion of males was significantly different to that in the previous year (p= 0.010, using the Mann Whitney 2-tailed test).

Figure 35 and Figure 36 illustrate the comparisons made between male and female contributions amongst the sample groups explored. As can be seen in Figure 36, interestingly male contributions rose within the second year when the training sessions of Facilitators was amended to include a focus on e-moderating skills.

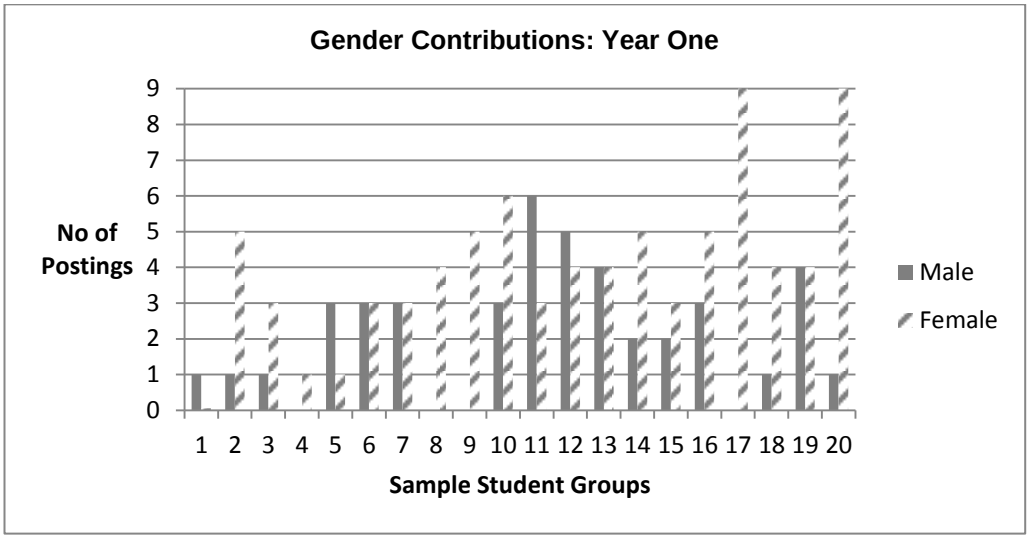

Figure 35: Comparison of Contributions by Gender (Year One)

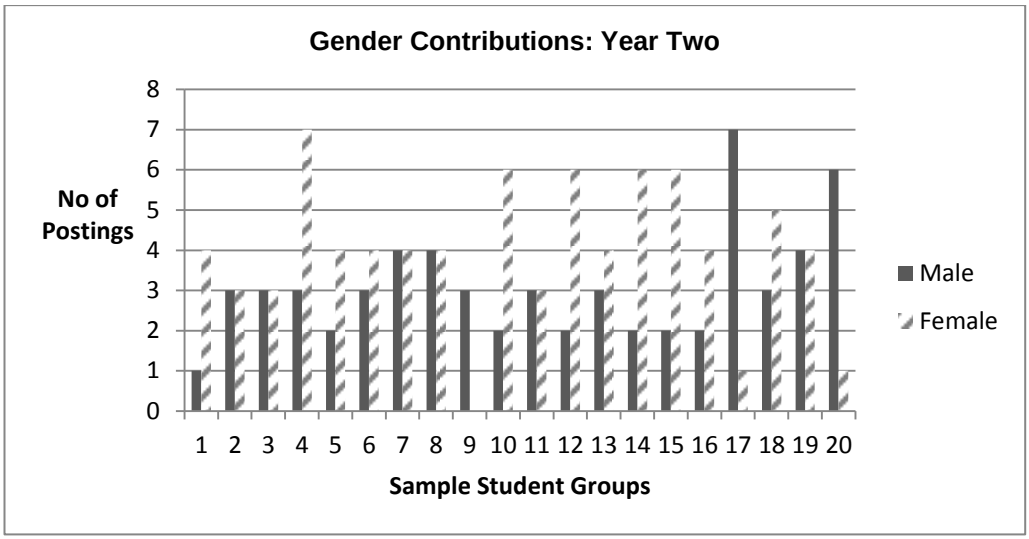

Figure 36: Comparison of Contributions by Gender (Year Two)

5.15 Discussion of Comparing Gender Contributions

Comparisons of gender contributions showed a marked increase in the proportion of male students who participated in the sample discussions explored in the second year, after changes had been made to the Student Peer Facilitator training. One view in the literature is that the mere presence of female students in an online discussion group can encourage more contributions from male students (Bostock and Lizhi, 2005). The comparisons made here sustain this perception somewhat, as the groups explored were represented generally more by female students than male, and thus may have influenced student contributions. Conversely however, it could be argued that the concept of reflective portfolios was simply better received by the female students in this study. In the online discussions the gender balance in the student population as a whole, and indeed amongst the Facilitators, was similar for both years and reflected a 6:4 female to male ratio overall. It is therefore uncertain whether additional female presence in the discussion groups or as Student Peer Facilitators, gave explanation for this observation. It is more likely for the reasons discussed above, that the enhanced training including e-moderating techniques helped to encourage more male students to participate in the discussions.

There is ongoing debate in the literature surrounding the socialised gender differences between male and female students in online environments. Some authors suggest female learners engage more in online environments than males and thus often dominate discussions (Gunn et al. 2002; Bostock and Lizhi, 2005). Whilst it is commonly accepted that males and females have different styles of learning both in and outside online environments, females are thought by some authors to be more collaborative in online environments because they are considered 'more suited' to them than males (Yates 2001; Arbaugh et al. 2008). In exploring these ideas however, the comparisons made here did not correlate with Yates (2001) or indeed Arbaugh et al's (2008) suggestions. For example there were a similar proportion of males and females in both years of the study and in all the participant groups. In the first year, a significantly higher proportion of female participants contributed to the online discussions than male participants. Rationalisation for this could be that the males preferred the face-face situations to the online learning because of their empathy with the learning style that face-face environments naturally provided (Caspi et al. 2008).

The increase in contributions from male students during the second year emphasised the influence that a female Facilitator had on the group interaction and development. This concept has been previously noted by other researchers who have, in explicitly exploring the presence of female students in online discussions, found female students encouraged more contributions from male students (Herring, 2003; Wishart and Guy, 2009). In Bostock and Lizhi's (2005) study of analysing asynchronous discussion groups with different gender mixes, they found that although the female students wrote more messages, in the mixed groups they wrote less in than in all female groups. In addition, they found that male participants wrote more than females in the all-male groups. These implications suggest therefore that the gender of one learner may influence another. Although the gender mix of groups was not explored as part of the explorations here, the majority of Facilitators within the groups were female (12 out of 18) which again implied that the presence of a female Facilitator was influential in the discussions. These implications were also supported by inferences drawn

from Case Study 1, where female students were found to favour the role of the Student Peer Facilitator more than the male students.

5.16 Chapter Summary

This chapter has presented findings from examination of sample student online discussions using the Community of Inquiry model and the specifically developed coding framework. The above discussion has centred on analyses of the text output from sample discussions within the two years of the study using both of these instruments.

Comparisons showed that introducing e-moderating skills into the training programme of Facilitators promoted the Cognitive presence of the Community of Inquiry model levels and enhance the nature of the facilitation that took place. As discussed in Chapter 3, the composition of the student population during the two years of this study was checked in terms of the content of the undergraduate medical programme at MMS, and that of the online discussion activities. All student participants followed the same programme of study under similar conditions. Identical training and preparation for the role of the Student Peer Facilitator was received by all students. As there was no difference between the two years in all of these respects, it is therefore assumed that the augmentation of the Student Peer Facilitator training played a significant role in the changes that were observed in the online discussion interaction. An updated version of the conceptual model of the study at this second stage of the research is illustrated in Figure 37.

The following chapter now presents a general discussion based on the implications within Case Study 1 and Case Study 2.

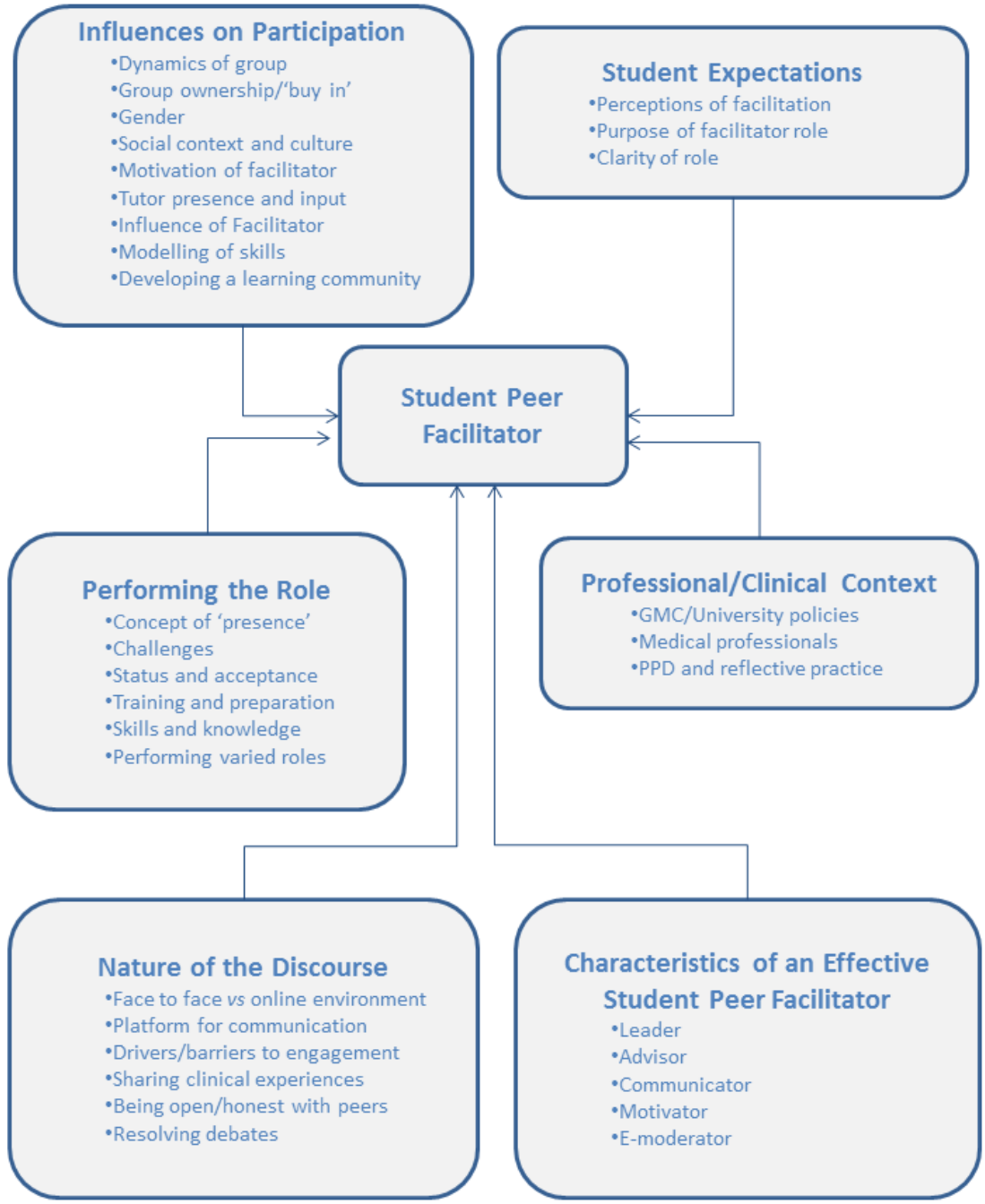

Figure 37: Developed Conceptual Model of Study

Chapter 6 General Discussion

6.1 Overview

The research presented in this study demonstrates consistency with other authors in that it is possible to develop an online asynchronous discussion environment to support reflective interaction amongst students that are peer facilitated by other students (Stodel, 2006; De Smet et al. 2010; Cushing et al. 2011). Introducing Student Peer Facilitators for the online group discussions confirmed a sharing of good practice amongst the peer groups and creating a context for fostering group collaboration. There was however both positive and negative aspects described by students in this study in the implementation of Student Peer Facilitators for online group discussion. Each of these is now discussed in turn under three key themes.

6.2 The Role of the Facilitator

The role of the Student Peer Facilitator in moderating the online group discussions was perceived as crucial by the medical students involved in this study. In addition the skills and attributes students perceived necessary for performing the role of the Facilitator with groups of peers, and effective training and support for the Facilitators were raised as important issues.

Ensuring there was little or no ambiguity surrounding the role of the Facilitator was a main concern expressed by many students and discussed throughout Case Study 1. This was in respect to those students who undertook the role of the Facilitator and other members of the groups. Whilst most students interviewed acknowledged they had some understanding of what the role of a Facilitator might entail, this was largely based on previous experience of same-year group facilitation or peer mentoring within a clinical context. Students used metaphors during the interviews to describe their Facilitators such as ‘frustrating’, ‘too reliant’, ‘hopeless’, ‘energetic’, ‘fruitless’, ‘inspiring’ and ‘went round in circles too much’. This was associated with their

general understanding, or misunderstanding, of ‘facilitation’ and consequently, exacerbated further the ‘mismatch’ of student expectations. In the Oxford English dictionary facilitation is defined as ‘to assist the progress of’ and ‘to make easier’. In its broadest sense, facilitation usually involves a low level of participation by a Facilitator allowing groups to draw their own conclusions, with increased involvement throughout the process by a Facilitator. Lower levels of participation by a Facilitator are thought to increase learner-learner interaction (Guldberg and Pilkington, 2007; Palloff and Pratt, 2008). There is therefore an assumption that the more effective the facilitator, the less obvious their contribution.

However, this structure of facilitation did not harmonise with the intended aims of the Facilitator in the current study. Unlike the traditional ‘teacher’, Facilitators here were faced with the challenge of not projecting themselves as ‘teachers’ or ‘experts’, but rather comparable learners amongst the groups they were assigned to facilitate. In addition, they were required to be active contributors to the discussions within the groups as much as other student members. As a consequence many students encountered difficulties achieving this balance. A challenge then was ensuring that the role of the Student Peer Facilitator was clearly defined at the outset. This supports ideas put forward by other authors who have paid attention to the importance of role explanation, and expectations of learners in online groups, specifically when promoting student learning and critical thinking (McLoughlin and Marshall, 2000; Meyer, 2004; Cleveland-Innes et al. 2007).

Data collected from the three components within Case Study 1 illustrated certain skills and characteristics students perceived necessary for an effective Student Peer Facilitator. The most favoured were being approachable and confident and being able to lead, advise and motivate. These skills were similar to those identified by other authors such as Rowley (1999) and Oliver and Shaw (2003). Students considered having such skills helped enhance the interaction and contribution that took place amongst their groups. Given the importance of a Facilitator’s skills on the discussion process, absence of such skills was viewed by some students to be

disadvantageous to the discussions. Students' views in this respect concurred with Sargeant et al. (2006) who explored the role and skills of an instructor in an online medical education setting.

As indicated in this study, it was established that a Facilitator with the appropriate skills could help shape communication, modelling, coaching and scaffolding amongst others within the same group (Sargeant et al. 2006). Interestingly, in this study, low levels of interaction were evident in the output of those groups where the Facilitator was described as 'poor' by students. Other authors have noted that poor moderating skills are the key contributor to the superficial engagement of learners in an online environment (Rourke and Kanuka, 2009). However, it is suggested that online facilitation and moderator techniques are skills that must be learnt, practiced and experienced (Zorfass et al. 1998), and indeed this was evident in students' comments concerning the instruction of the Facilitators. As noted by many students, it was clear that the training and preparation for the role of a Student Peer Facilitator was central. Nonetheless, as Twigg (2001) cautions even with well-trained Facilitators, educators it should still not be assumed that students will engage in online discussions.

6.3 Improving the Online Experience

Building an online environment where groups of learners can engage in discussion was an important aspect for the Student Peer Facilitators in this study to take into account. In this respect motivation and the relationship between Facilitators and other students within the groups was significant in improving the online experience of the learners. There is much debate in the literature concerned with the relationship between motivation, maintaining engagement (Garrison et al. 2000; Salmon, 2002) and the role of the Facilitator (Davies and Graff, 2005; Andresen, 2009) in online student group activities. However, whilst the impetus of the Facilitator is often highlighted as a critical element of enhancing engagement, it was clear that sustaining engagement and motivation amongst the learners was problematic for some

Facilitators in this study. Several observed the need to perform different roles within their groups to help improve the online experience of the groups.

Statistical information within the WebCT system showed frequent use of the online forums within both years of the study. Yet as noted in previous investigations that have explored online discussion use in healthcare education, indications show that uptake of such learning facilities is often poor (Guzdial and Turns, 2000; Sandars and Langlois, 2005). Much debate in the literature centres on whether engaging in such forums is voluntary, and exclusively for the convenience of the learners, or compulsory and therefore driven by assessment. However, findings in this study were quite different to these suggestions, as although there were some non-contributors to the discussions, these were very much in the minority. Student participation in the online group discussions explored here was not a mandatory requirement of the medical programme students followed. The discussions were not monitored by Tutors, nor were they formally evaluated during any time during the two years of this study. Given this, it could be argued that student participation to the online discussions in this study was therefore surprisingly high. Moreover if the discussions had been linked to other online environments, both internal and external to the discussions explored, student involvement may have been even more advanced.

Students offered different reasons as to why they engaged in the online environment. These included an attraction to logging on to WebCT to post a message; read and respond to other messages and consider viewpoints and experiences that had been added by their peers. Several students considered the opportunity to view other students' experiences helped reflect on their own professional development. This finding concurred with other authors who recognise incorporating opportunities to view other reflections of clinical experiences as a valuable tool for the professional development of medical students (Maudsley and Strivens, 2000; Mann et al. 2009). In the current study, the practice of sharing views not only helped to maintain the group discussions amongst the students, but encouraged them to revisit the discussions throughout development of the professionalism activities that

were set, thereby increasing motivation and the overall online experience, as found by Wang (2008).

There is a hypothesis that online learners are independent learners intrinsically motivated to participate, albeit it is one that has been challenged previously by other researchers (Garrison et al. 2000; McCombs and Vakili, 2005). However, the development of motivation amongst students in this study was heavily influenced by the relationship between the Facilitator and the rest of the group. Such type of facilitator-learner interaction has been noted to be positive for promoting and encouraging critical thinking and reflection amongst learners and thus improving the online experience (Maudsley and Strivens, 2000; Stodel et al. 2006). Much of this is based on the concept of the correlation between strength of presence and student satisfaction as noted by Picciano (2003). Several other authors have researched the importance of good facilitator-learner interactions in order for constructive online learning to take place and stress issues such as power and balance in individual identities, group dynamics and the environment (Goffman, 1959; Duff, 2000; Anderson et al. 2001; Meyer, 2004; Andresen, 2009).

In the current study students described the notion of an element of ‘presence’ in the online discussions as significant, in that it sustained the social relations of the communication between the groups and helped advance understanding of the subjects discussed. As noted in previous studies in the literature, engagement with reflection is an explicit outcome of the undergraduate medical degree programme (Cruess and Cruess, 2006). Medical students’ reflective practice emphasises critical analysis of learning experiences. At its best this can integrate observations of patients, professional behaviour and clinical practice. However, Pena-Shaff and Nicholls’s (2004) exploration of student participation within asynchronous bulletin boards observed that whilst such environments can provide students with opportunities to develop reflection, the process of reflection is often individual rather than interactive. Students within this study had previous experience of Tutor-led reflective portfolio sessions for two years prior to the

introduction of the Student Peer Facilitators. Hence, it may be that for these students some knowledge and experience of reflective group learning prior to the introduction of the Student Peer Facilitators had already been developed.

6.4 Sharing of Clinical Experiences

Perceptions from students in this study displayed that the guidance of the Student Peer Facilitators was essential to creating an atmosphere that helped promote engagement and sharing of experiences as previously found by Pawan (2003). There was evidence of a trusting environment that had developed amongst many students, in that they openly discussed personal clinical experiences (good and bad) with their peers. This resonated with dimensions of a 'social comfort' that online users can often experience with their peers (Sargeant et al. 2006; Chen et al. 2009). Findings in this respect were also consistent with Poole's (2000) and Rourke and Anderson's (2002a) analysis of online discussion environments amongst students, where more message postings were found in discussions that were moderated by students than Tutors.

However, the flip side to being able to share clinical experiences with peers as noted by several students, was the lack of input from Tutors in the online discussions. This led to expectation amongst some students for the teaching presence to be replaced by the Facilitators. This was an interesting observation and relates to debates in the literature on learner-learner interaction and reliance of a 'teacher' to answer questions or settle debates (Guldberg and Pilkington 2007; Andresen, 2009). The notion of this is also in agreement with other research that has reinforced the importance of Tutor Presence. Such arguments suggest that teaching presence from Tutors (or other students) to develop guidance and a higher Cognitive Presence is essential (Salmon 2002; Garrison and Anderson, 2003); it helps learners construct new knowledge (Anderson and Dron, 2011) and is closely aligned to student satisfaction (Swan and Shi, 2005). Other similarities with the literature were found in attitudes expressed by students concerning the 'lack of direction', when sharing clinical experiences with each other. The

challenges of students exchanging personal experiences but not being supported by reasoning through teacher presence have also been noted by other authors (Angeli et al., 2003). Conversely however, Tutor-led discussions have been found to lead to Tutor-centred discussions rather than student-centred discussions (Dennen, 2005). In this respect there seemed to be some inconsistency in the student views portrayed here. Whilst a common concern was the lack of Tutor presence, at the same time a preference for exchanging opinions with peers in a supportive environment was also conveyed. This anomaly is something Rourke and Anderson (2002a) have observed in their research. Interestingly, the idea of input from Tutors was rejected by some students in this study - unsurprisingly perhaps this came mostly from the Student Peer Facilitators.

Fundamentally in this study it seemed to matter to students who facilitated the online discussions, which in turn raised questions surrounding the appropriateness of peer facilitators in a problem-based learning programme and the notion of independent reflection amongst the participants. When Solomon and Crowe (2001) established a peer assisted learning system within a problem based learning context, they assigned each group a Tutor whose purpose was to attend tutorials in an observer status, and discuss difficulties the group might be having. Despite this some Tutors turned out to be more active in the discussions than their remit suggested and were found to undermine the status of the peer facilitator. It is possible that in the current study there may well have been a similar outcome to Solomon and Crowe's (2001) study if the Clinical Mentors or Tutors were given access to the group discussions and undertook the role of a 'teacher'.

6.5 Integrating Face-Face Activities

Previous research suggests that using asynchronous online environments can be a useful strategy to encourage collaborative work and effective in processing positive and negative learning experiences (Miller and Miller, 1999; Sutton, 2001). Findings from this study implied that several of the male students preferred the group discussion activities to be in a face-face environment rather than an online one, and supported other authors who suggest that male learners contribute more in face-face discussions than online discussions (Caspi et al. 2008; Huang et al. 2011). Other implications are that because the students in this study spent a large proportion of their worked based time together and were often in close proximity throughout their training and social lives, they engaged with the online discussions differently to other students.

Other issues surrounding the integration of online and face-face activities included the structuring of student timetables to ensure opportunities for greater participation by students. Providing longer time frames for students to read, reflect and prepare their responses to each other was perceived as an important factor. This notion has been formerly researched by several authors who have emphasised the social and cultural impact of online learning and the influence of contextual factors on online discussions, particularly for learners such as medical students (Tu and McIssac, 2002; Sandars and Langlois, 2005). Equally, whilst this may have impacted on the participation levels in these discussions, it has been noted that typically online learners can often lose interest or motivation halfway through an online course or programme without having any direct physical contact and interaction with other learners or Tutors (Hou, 2010). As previously discussed students in this study had an amount of face-face interaction with each other throughout the period of the online discussions. Nonetheless, although students did have opportunity for face-face discussions with their peers, it did not necessarily mean they were more reflective in this context than in the online discussions.

The learning culture of the students in this study surfaced as an important aspect of using Student Peer Facilitators. Although the students were familiar with the practice of integrated face-face activities from following a problem based learning programme, the introduction of the online environment added a different dimension that posed some challenges. In problem based learning experience is developed in solving problems and identifying gaps in knowledge. However, the nature and theoretical development of the discussion activities set in this study meant that often the discussions were not 'resolved' amongst the groups. There were expectations within some of the student groups that the Facilitator would 'know the answer' and this was linked to a sense of 'loss of control' of the discussions as described by some students. This concept corresponded with ideas previously noted by Savin-Baden (2006) concerning the difficulties in integrating online learning with problem based learning approaches.

On a related note, many of the online messages posted by students were lengthy, emotive and revealed a high level of self-analysis. Other studies have shown that online discourse can be much more open and personal than traditional face-face classroom discussion (Swan and Shi, 2005). Indicators here suggested that the online discussions helped students to reflect on their experiences through the opportunity to reflect a little or lot and any time, any place basis in a social learning environment. This was determined by the fostering of collaboration within the online discussion environment, and a seeking of 'connections' with settings outside student's normal educational environment. Wang's (2008) study on developing online communities notes this can help to construct a 'sense of belonging' where face-face social interaction is uncommon. This was again consistent with students' descriptions in this study of 'trust' and 'feeling confident' to communicate their ideas and personal thoughts with other members of the groups. Many implied that it was less complicated to ask their peers 'stupid' questions without feeling embarrassed or uncomfortable than a Tutor, which would concur with other studies that have shown similar findings (Sargeant et al.2006).

6.6 Building a Community of Inquiry

It was apparent that building the foundations for an effective Student Peer Facilitator such as including e-moderating skills into the training helped students appreciate the challenges of building a community of online learners and facilitators. Amending the training of the Facilitators in the second year of the study as explored in Case Study 2, confirmed changes in the levels of Cognitive, Social and Tutor presence described by the Community of Inquiry theoretical model (Garrison et al. 2000). Modifications were seen in all three levels of the model, the student-student interaction and the nature of the facilitator language used by students within the groups. Furthermore, changes in the Facilitator preparation and training influenced the online contributions by gender. Although the gender balances in the online groups within both years of the study were similar, there was a marked increase in the number of male students who contributed to the online discussions in the second year and furthermore female Facilitators appeared to influence contributions to the online discussions in a positive way. This implication however did not harmonise with those studies who found no significance difference between male and female online learners (Wade and Fauske, 2004).

As demonstrated in Case Study 2, incorporating online moderation training strategies into the training programme of peer facilitators for such discussions, helped to promote the building of a community of inquiry, reflective discussion and critical thinking in the discourse that took place. Including e-moderating skills into the content of the preparation and training of Facilitators proved significant. This linked to previous studies that have highlighted the importance of integrating an appropriate training programme for Facilitators, the use of clear guidelines and facilitated discussions to help improve and stimulate the involvement of learners in online discussions (Sandars et al. 2007). Implications from the exploration of the levels of Cognitive, Social and Tutor development amongst the discussions explored in Case Study 2 support this view. Similarly other investigations that have indicated online groups led by students can enhance development of

facilitation skills, such as establishing ground rules of discourse, 'Socratic questioning' and appreciating the contributions of others were relevant in this respect (Hew and Cheung, 2008). Findings from Case Study 2 extended this concept, and implied that the content and nature of the Facilitator training can enhance the participation of members of a community, develop the reflective discussions, and spread good practice, most importantly even amongst those who do not receive training.

6.7 Chapter Summary

Student use of the online environment for reflective, collaborative group discussion during the two years of this study was substantial. The role of the Student Peer Facilitator was established as a strategy that could have a positive influence on the quality of online discussions through effective initiation and continuation of discussions. An important feature of group discussion amongst medical students is encouraging a reflective element, and the development of critical thinkers. Findings from Case Study 2 support the notion that student experiences from their clinical workplace environments can form the basis of reflective learning in online discussions facilitated by peers and the building of effective learning communities (Driessen et al. 2008; Mann et al. 2009). Students were in a position to observe other healthcare professionals codes of conduct and practice, reflect on them and through the medium of the online discussions relate them back to their own personal and professional development. This supports the idea that professionalism role modelling exists where medical students mould their own attitudes and behaviours on those of senior colleagues that they deem exemplary in medical practice (Wright and Carrese, 2003).

However, simply forming asynchronous discussion forums is not enough to ensure this practice is sustained. It was evident that consideration must be given to the degree to which the Student Peer Facilitators are prepared, as more focused training for moderating online discussion was shown to have a positive effect on the learning that the group experienced. Including training in e-moderating skills for the Facilitators had implications for improving the

structure of the online experience for students and a higher level of learning taking place amongst group online discussion. As noted by Rourke and Anderson (2002a), although online group discussion practices are now fully embedded in Higher Education, they are still a relatively innovative style of learning that requires a careful review of the dynamics of the Facilitator role in the group discussions, other learners within the group and the culture and social environment of the learners.

In the following chapter a summary is presented based on the implications of this research to theory and educational practice. In addition the limitations of the research and directions for future investigations are discussed.

Chapter 7 : Implications, Limitations and Directions for Future Research

7.1 Overview

The aim of this research was to investigate medical student perceptions' of using Student Peer Facilitators for asynchronous online discussion forums as a learner-centred approach to enhance professional development and reflective practice. The implications of these investigations were presented in Chapter 4 (Case Study 1) and Chapter 5 (Case Study 2). This concluding chapter considers the broader theoretical and educational issues of the research, its strengths and limitations and areas for future research.

7.2 Implications for the Philosophy of Peer Learning

Findings from this study have a number of implications that are worth considering for professional practice and future research on peers' interacting and sharing multiple perspectives in an online environment. Evidence gained from undertaking the two case studies established that using Student Peer Facilitators as an educational approach could assist towards facilitating reflective online group discussion; the sharing of good practice; and creating a context to foster group collaboration and communities of inquiry. As discussed in Chapters 4 and 5, student participants revealed an awareness of collaborating with peers in the learning communities, and indicated a need to connect with each other in meaningful ways. The introduction of practical experience of e-moderating skills for Facilitators confirmed marked enhancements in the development of the online discourse and interaction that subsequently took place amongst the student groups explored. This was particularly visible within the Cognitive Presence levels in the discussions as described by the Community of Inquiry framework. Initial analysis using the Community of Inquiry model assumed that it was the introduction of e-moderating skills into the training and preparation of the Facilitators that improved the cognitive levels in the online discussions explored. By

modelling these vital skills, it was possible for the Facilitators to encourage other untrained student group members to emulate their good practice in the online discussions. If facilitation skills and good practice are to be transferred to other group members, then it is important then that this aspect is not overlooked. Another outcome of the amended training showed an increase in the number of contributions from male students to the online discussions in the second year of the study compared to the first.

However, online communication is a fluid style of learning, and for the student participants in this study interacting with peers in online discussions for their formal education was a relatively new encounter. Numerous other studies note that although online discussions have the potential to support professional education, student engagement in online environments is often problematic (Oliver and Shaw, 2003; Hew and Cheung, 2008). Although significant benefits were acknowledged by students in using the peer facilitators as a pedagogical approach, a variety of challenges emerged. These included a lack of 'presence' by Tutors; the social dynamics and learning culture of the learners; building and sustaining a learning community; the role of the Facilitator and interaction amongst peers; and the content.

It was clear from the student perspectives gain in this study that the introduction of a new role such as a Student Peer Facilitator within an online community of students needs to be explicit to all members of the community. Clarity and expectations of the role, along with a clear purpose can assist towards acceptance of the role and hence collaboration amongst the group. In this respect the impetus of the Facilitator and the level of skills and knowledge required were crucial together with recognition that these may not be inherent in Facilitators designated to moderate discussions. Embedding appropriate training and preparation for the introduction of a Facilitator of online group discussion was therefore viewed as vital.

For learners to benefit from a collaborative discussion environment facilitated by peers it is important that designers of online learning programmes

consider a shift in how skills, training and preparation of Facilitators or moderators of such discussions are approached. Possible ways to address this are to purposefully include online moderating components into the training; use additional Tutor support, a partnering approach of Facilitators, and an ongoing assessment of students' progress in the discussions.

7.3 Implications for Online Communities and Medical Education

Building a sense of community in the online discussion environments was emphasised as a key component throughout Case study 1 and 2. As shown by other authors, historically the focus of much research concerned with online learning in a medical education context centres on the learning environment itself (Stiles, 2002; Ellaway et al. 2004). Yet clearly the subtleties of medical students and their learning process within an online community play an active role in the process and should not be ignored. Furthermore, when exploring adult and experiential learning theories with an emphasis on reflection, the student empowerment should not be overlooked. The importance of such pedagogies can have an impact on the online dialogue that takes place amongst the student groups (Kolb, 1984). In this study, as demonstrated particularly in Case Study 2, medical students actively engaged in the online discussion forums that were established for personal and professional development activities. However complex internal and external forces emerged that had an influence on the students' commitment to the discussions. A reliance on the motivation levels of students during the process of PBL has been noted previously (Dolmans, 2005). Examining the underlying structures within the educational model that students follow should therefore be considered when aiming to effectively support online reflective teaching and learning.

Developing a sense of community brought significant social and cognitive benefits to the online interaction that took place amongst the students in this study. The concept of this was discussed in the literature review presented

in Chapter 2. Many studies emphasise that reflection is a personal and social endeavour that does not occur in isolation, but is rather shaped by external influences, discussions and interactions with others (Garrison and Anderson, 2003). However, for the medical student participants in this study there were practical as well as educational issues for the development of such communities and engaging with the online discussion in their clinical work based placements. Educators should consider the purpose of an activity and whether online discussions boards are essentially the best approach to deliver with medical students. It could be that other advanced technological mediums may be more suited to such students such as Wikis for example. Moreover, perhaps the decision on the medium for discussion should be best made by the students themselves to encourage a more student-led approach and thus enable them to have more ownership of the discussion and adapt to their own learning styles?

Beside the role of the Facilitator when introducing student learning approaches such as peer facilitators for promoting online discourse, issues such as learner motivation, gender and preferred styles of learning and communication should be borne in mind. Though some of the medical students in this study preferred sharing clinical, sensitive experiences and discussing ideas with their peers rather than Tutors, some still favoured the presence of a Tutor for ‘direction’. Implicit from some student participants was the perception that the presence of a Tutor was influential in determining student satisfaction than the presence of peers. However, this has been noted previously as something that may cause a conflict of interest Laurillard (2002) and Swann and Shih (2005). Students can become more involved and responsible for their participation when entire discussions are not instructor facilitated but peer supported (Poole, 2000; McLoughlin and Marshall, 2000) as demonstrated in this study. In essence, this would suggest that when implementing such strategies, it is important for educators to be especially aware of the individual needs and learning culture of the particular students.

7.4 Limitations and Other Explanations

This research study is an example of ‘real time’ curriculum research and development and the evidence considered was the best available at the time. Although the findings from this research were strengthened by the use of mixed method approaches and a range of data sources, a number of limitations were encountered that should be noted. Each of these is now discussed in turn along with alternative possibilities for the findings presented.

First, as noted in previous assignments on the Doctorate in Education programme, cultural influences from being based in a scientifically-based work environment and the context of my professional practice will no doubt have influenced this research study. Equally, my involvement in the delivery of the training of the Student Peer Facilitators in the two years of this study may have prejudiced my perspective. As a ‘cultural insider’, I am aware that the situation, results and meanings derived from this research would be viewed from a different perspective by another independent researcher.

Second, the setting of this research and the characteristics of the medium used for the exploration of the online facilitation was unique. The study was conducted in one of the largest Medical Schools within the UK. The data set for this study was from within one student year group, at one medical school, within one University. As a result the sample of students who participated in this research may not be typical of third year students based at other smaller medical schools. In addition the student participants in this study relied on the selection of the student groups by the MBChB administrative programme team at the time of this study. Alongside this, analysis of data and conclusions drawn from this specific context may have been different if an alternative learning platform to WebCT had been used. Similarly, the technical ability and online skills varied amongst student participants in this study and may therefore have been a significant factor to the contributions in the online discussion forums. The outcomes of the findings may therefore

have been different if the researcher had been able to select the students amongst the groups.

Third, the focus of the online discussions explored throughout the two years of this study was pivotal to the understanding of professional behaviours and attitudes for medical students. Student participants were asked to download their contributions to the discussions for review and discussion with their Clinical Mentors at the various Teaching hospital sites. This may have affected the levels of student interaction and prejudiced the 'good' online behaviour that was evident in the messages that were posted. Equally, the outcome of the discussions may have been different if the discussion topics were more diverse, or moreover if the students themselves had been able to choose the topics of debate.

Notwithstanding the above however, some authors suggest motivation, interaction and construction of reality are understood better if a researcher is embedded in the setting, and that focusing on prior knowledge is often thought to be neglected (Strauss and Corbin, 1990; Gbrich, 1999). It is possible therefore that some of the factors discussed above may have helped, rather than hindered, the understanding and analysis of participants' experiences and perspectives. Attempts were made to limit drawbacks by recruiting student participants from four different educational settings within the population of this study. Personal assumptions and ideas were consciously avoided during interviews and focus groups, and when concepts were unclear, were clarified by students to ensure they were correctly interpreted. Using participant-led methods retained student's perspectives and helped limit preconceived ideas or beliefs that, I as researcher, may have had on interpreting the various data.

There were no variables other than the intervention of the amended training and preparation that occurred during the second year of this study. There were also no differences during the two years of the research in terms of the composition of the student population, the content of the undergraduate medical degree programme delivered at MMS and the online activities that

were undertaken by the student groups. In addition, peer reviews were regularly undertook with colleagues and educationalists at MMS and supervisors and Director of Studies at Manchester Metropolitan University. Performing regular self-critical discussions facilitated progress in the research as did partaking in the annual Student Conference held at Manchester Metropolitan University.

7.5 Directions for Future Research

As with any case study this research has focused on gaining an understanding of a complex real life setting, in this instance this was limited to third year medical students in one medical school. The two case studies conducted were specific to that sample and it is acknowledged that the picture captured throughout this research merely represents a snapshot in time. Although the data collection activities undertaken throughout this study explored perceptions and experiences of the medical students involved in the research, several other avenues were unearthed, that would be interesting to extend the scope of this research further.

One future direction would be to explore the possibility of two Facilitators moderating the discussions where one initiates discussion and the other 'wraps up' the discussion. In the current study one Facilitator moderated each of the student groups. Further research might explore the effects of using more than one Facilitator on the output of the online discussions and the interrelated dynamics amongst the groups of students. This could also be designed to grow in complexity over an academic semester to encourage further critical thinking amongst students and their peers. To date, other studies that have explored this perspective of facilitation have focused on students' reflections rather than the online discussions (Wang, 2008).

A second course to pursue would be the implications of 'presence' through the use of Tutors to facilitate online group discussions amongst students to provide further insight into the development and interaction amongst the student groups and their peers. The importance of enhancing 'Tutor

presence' was often highlighted by student participants in this study. It would therefore be of interest to explore this further by randomly selecting control groups that were allocated either a Peer Facilitator or a Tutor Facilitator and compare experiences of individuals within those groups and the collaborative development of the groups. This could be conducted using the Community of Inquiry model which would help provide insight into other presences recently described by the model, such as 'emotional' and 'student presence' (Garrison, 2011). Future administration of the Community of Inquiry model would help to determine if better quality of interchanges do map onto improved individual learning and formatively guide participation.

Third, it was not possible during this study to demonstrate the impact or broader influences that the group online discussions may have had on the medical students' clinical practice or their work based placements. The issue of students sharing clinical experiences may have influenced the development of students' clinical learning in some way, and there would be much value in exploring this notion in depth. How for example did students interact with their peers, colleagues and patients within the clinical environment as a result of the online reflective discussions? Future studies could explore the potential effects of the discussions on areas such as the patients encountered, planning and recognition of limits in students' skills and knowledge and furthermore how they linked to the GMCs' 'Maintaining Good Medical Practice' principles (GMC, 2009).

7.6 Summary

In the context of this study student peer facilitation was shown to be one way of increasing opportunities for reflective practice amongst medical students and found to assist online group discussion; the sharing of good practice; and creating a context to foster group collaboration and communities of inquiry. Results corroborate with research from a number of studies within the medical education sphere where successful implementation of peer facilitation in an undergraduate context identifies promising pedagogical benefits for learners (Sandars and Langlois, 2005; Buelens et al. 2007).

The findings here maintain ideas that link modern constructivist and connectivist theories with the value of peer-peer interaction in investigating multiple perspectives (Rourke and Anderson, 2002a). Results were found to support such perspectives, in terms of evidence drawn from positively promoting critical thinking and resolving discussion amongst the sample groups that were explored during Case Study 2. It was clear that many of the student participants in this study relished the opportunity to share views and experiences with their peers in a supportive learning environment. The online discussions enabled negotiation of shared meanings and challenging their own opinions and that of others in the online groups. Whilst using Student Peer Facilitators helped to lay foundations for the development of a collaborative culture amongst the online groups, there were however, certain conditions that underpinned effective peer facilitation that should be acknowledged such as expectations, purpose and rationale for the role.

As described, practical experience of e-moderating skills was introduced into the training of Student Peer Facilitators in the second year of this study to enhance online group interaction. In the text output of the sample student groups that were explored, the Cognitive Presence levels as depicted by the Community of Inquiry model showed the most visible differences. Another aspect of adjusting the training was a marked increase in the number of contributions to the discussions from male participants within both years of the study. Although this was unexpected, it highlighted the potential influence of the Facilitators on the discussions and the impact of the training in appropriate facilitator skills. In this context, by modelling vital facilitation skills, it was possible for Student Peer Facilitators to encourage other untrained student group members to emulate good practice within the online group discussions, which in turn also appeared to encourage more male students to contribute to the discussion forums. Although the Community of Inquiry model has been used as a conceptual framework mostly in a post-graduate learning context, this research confirmed that the model can be used as a lens to explore an undergraduate medical educational context.

It was established that expectations of the role of a Student Peer Facilitator must be explicit for both Facilitators and other members of the learner groups; the educational culture of the learner group must be acknowledged and embedding appropriate moderating training helps effectiveness of peer facilitation in an online environment. Appreciating the various challenges faced by Student Peer Facilitators emerged as important by many of the student participants in this research. These included overcoming student apathy, lack of engagement and receptiveness by a multiplicity of learners – all critical to the introduction of a new process (whether online or face-face situations). Not all learners who were independent in face-face situations necessarily found the online environment a 'good fit' for interacting, questioning, decision making or reflecting on their own learning. In this instance, implicit models of learning; the context of the curriculum followed; individual learning styles and levels of motivation were noted as important to take into account. It is possible that consideration of such factors can facilitate promotion of student's engagement; fostering social interaction; and assisting in building a 'community of learners'.

As educators we need to be mindful of the transfer of skills developed in processes such as problem based learning onto an online environment and providing clear guidance and training in such instances to enhance socially constructed learning. Whilst online learning platforms can establish a vehicle for socially constructed learning at a distance, more guidance, training and development may be needed to ensure effective transfer and replication of the skills developed onto such environments. Examining the underlying structures implicit within the educational model students follow should be considered along with ongoing assessments or checking progress of individual participants and the group discussions. However, it should be noted this may introduce issues surrounding the effectiveness of using traditional methods of assessment in a non-traditional method of teaching and learning.

Despite the challenges of using Student Peer Facilitators in an online context, a new learning space is offered for medical students to support their learning within a PBL process. Trends towards learner-centred strategies such as using Student Peer Facilitators may help lead to a promotion in understanding and developing students reflective learning in such contexts as online discussion. The role of facilitation could be shared amongst students, thus empowering students to have meaningful roles in their peer discussions.

The findings of this study are initial steps towards providing evidence-based research on using Student Peer Facilitators for moderating asynchronous online discussions amongst undergraduate medical students. Other researchers are encouraged to build on the implications drawn in broader educational settings to this research study in order to gain a deeper understanding of online peer facilitation models for widely dispersed students.

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APPENDICES

APPENDIX A: ONLINE DISCUSSION ACTIVITY FOR STUDENT PARTICIPANT GROUPS

MANCHESTER 1824

The University of Manchester

Discussion Activity for Student Participant Groups

'What are the issues surrounding professional behaviour in medical students?'

Purpose:

- To support and extend your understanding of modern professionalism, as a Year 3 medical student
- To link this with your own conduct and personal and professional development
- To record this in your personal and professional development portfolio

Introduction:

The desirability of a student code of conduct, professional behaviours of different healthcare professional and broader problems, such as the influence of the society in which we live on the conduct of doctors, are all important issues concerned with professional conduct and behaviour. The GMC has now published a code of behaviour for undergraduate medical students and it is essential that you consider and think critically about this, drawing from your own observations and experiences at the beginning of year 3. You will be expected to discuss key topics concerning professional behaviour through the medium of Blackboard. As an end point of these discussions, you will be asked to identify examples of student behaviour or conduct (good or bad) which might be suitable as illustrations for the GMC's Good Medical Practice (GMP) headings.

Your online discussions will take place amongst your PBL group and will be supported by a student trained as a "Student Peer Facilitator".

The end point of your discussions will be for your group to use the GMC Good Medical Practice as a framework into which you can introduce your own examples of good and poor behaviours. Your group will then see if it can reach a consensus view for each of the Good Medical Practice sections. Then each group will post its own set of behaviours on the general discussion board, for viewing by the whole year.

You will be expected to show evidence of your participation in this exercise at your first Portfolio review.

Medical Student Professionalism Description of Behaviours		
	Good	Poor
Good Clinical Care Concern for the patients you meet Good presentations on ward rounds Helping the F1 doctor		
Maintaining Good Medical Practice Seeking feedback Learning from patients Perfecting your skills Working well in PBL		
Teaching and Training Appraising and Assessing Working well in PBL Providing constructive evaluation Participating in Portfolio review		
Relationships with Patients Consent Confidentiality Rapport Complements		
Working with colleagues Your clinical partner Your PBL group Other members of the clinical team		
Probity Honesty in evaluations Attendance records		
Health A local GP Reporting sickness Positive attitude to health and fitness		

APPENDIX B: STUDENT PARTICIPATION INFORMATION SHEET AND CONSENT FORM

MANCHESTER 1824

The University of Manchester

Student Participant Information Sheet

Title of Project: ***'Using Student Peer Facilitators for asynchronous online discussion to extend professional development amongst undergraduate medical students'.***

Researcher: Maria Regan Email: maria.regan@manchester.ac.uk

Dear Year 3 Student,

You have been invited to participate in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve.

What is the purpose of the study?
The goal of this research is to explore the educational practice of using Student Peer Facilitators in an online learning environment to support professional development activities amongst Year 3 medical students. In order to do this, I would like to conduct an in-depth evaluation of the role of the Facilitator and the use of the online discussions.

Why have I been chosen?
You have been chosen because you have indicated an interest in contributing your views about the use of Facilitators in an online discussion environment.

Do I have to take part?
No. It is up to you whether to take part or not. You can withdraw from the study at any time and do not have to give a reason.

What will happen if I take part?
You will be asked to participate in either an individual interview or a focus group discussion between yourself and other medical students. These will be recorded and notes will be taken. All information collected will be anonymised and analysed using qualitative methods. The identity of all participants will remain confidential. Data will be kept confidentially for three years and will then be destroyed securely. Whether you are interviewed individually or in a focus group you will be sent copies of the transcripts.

There is no external funding for this study. It is undertaken as a Doctorate in Education thesis supervised by Professor John Schostak, Institute of Education, Manchester Metropolitan University. The findings from this research will be disseminated to the teaching and learning community within the Manchester Medical School, the University of Manchester and wider educational fields through research conferences and publications.

Thank you for agreeing to take part in this research study. Your input is very valuable.

Maria Regan
Teaching Fellow
Medical School, University of Manchester

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Student Participant Consent Form

Title of Project: ***'Using Student Peer Facilitators for asynchronous online discussion to extend professional development amongst undergraduate medical students'.***

Approved by: Committee on the Ethics of Research on Human Beings, University of Manchester

Maria Regan has explained to me the nature of this research study and what I would be asked to do as a participant. She has given me my own copy of the Participant Information Sheet, which I have read.

I consent to taking part in the research for this study as a volunteer in either interviews or focus groups. I understand that I am free to withdraw at any time without giving any reason and without detriment to my progression on the MBChB medical degree programme.

I agree to the interviews or focus groups being tape recorded for the purposes of transcription and analysis. I understand that all information will be anonymised and remain confidential.

Student Participant:

Signed: ..... Date: .....

Name (Block letters): .....

Witnessed by: ..... Date: .....

Name: (Block letters): .....

Researcher:

I confirm that I have fully explained the purpose and nature of this research study and the risks involved.

Signed: ..... Date: .....

Name (Block letters): Maria Regan

Consent form May 07.

APPENDIX C: QUESTIONNAIRE, INTERVIEW AND FOCUS GROUP FORMAT AND CODING STRUCTURES

MANCHESTER 1824

The University of Manchester

STUDENT PARTICIPANT QUESTIONNAIRE

USING STUDENT PEER FACILITATORS FOR ASYNCHRONOUS ONLINE DISCUSSION TO EXTEND PROFESSIONAL DEVELOPMENT AMONGST UNDERGRADUATE MEDICAL STUDENTS

Teaching Hospital: C ☐ H ☐ P ☐ S ☐ Gender: M ☐ F ☐

Post-graduate student: Yes ☐ No ☐ Student Facilitator: Yes ☐ No ☐

Please indicate your agreement with the following questions and complete all items. All answers will remain confidential and will have no bearing on your progression on the MBChB programme. The data collected will be used for my Doctorate in Education thesis.

Role of the Student Peer Facilitator

The student peer facilitator effectively supported and promoted group discussions

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

The student peer facilitator gave regular feedback and guidance to my group

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

The professional debates discussed by my group were effectively resolved

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

My group discussions benefited from having more than one student peer facilitator (where applicable)

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

My group discussions did not need a student peer facilitator

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

Engagement and Participation in Group Discussions

I participated regularly (once a day) in the online group discussions

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

I read messages in the online discussions but did not post/respond to any messages

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

I participated in my group discussions more in the online environment than I normally do in face to face group meetings

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

I felt confident to communicate my ideas in the online discussion forum with my peers

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

I sometimes felt vulnerable reflecting in the online environment to my peers

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

Sharing personal and professional experiences with other peers is important

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

Online Environment

I valued the option of using an online environment for my portfolio activities

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

The online learning environment allowed me to be more self-reflective

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

The online discussions allowed those with stronger writing skills to be more prominent

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

Absence of face to face communication had an impact on how my group communicated

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

The online discussions in my group promoted honesty and openness

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

I would prefer Clinical Mentors to participate in our group discussions

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

Reading and responding to other student experiences provided an opportunity for a fresh look at my own development

Strongly agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strongly Disagree ☐

Please add any other comments or suggestions.

Please return to: Maria Regan, Room D, First Floor, Rusholme Health Centre, University of Manchester, Walmer Street, Manchester, M14. Email: maria.regan@manchester.ac.uk.
Thank you for your participation.

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STUDENT PARTICIPANT INTERVIEW STRUCTURE

a) Background
- Overview of students overall impression of Student Peer Facilitation
  Prompt: Previous knowledge of peer mentoring, peer assisted learning

b) Role of Student Peer Facilitator
- What do they perceive the role of a SPF to be?
  Prompt: What makes a good SPF?
  Do they think the SPF helped to support/promote your professional development? If so in what way? If not how could they have done?
- Reasons for volunteering to become a SF (if appropriate)
- Experience of SPF/or performing the role of a SPF?
  Prompt: What aspects went well/not so well?
- Aspects students liked/disliked about being a SPF?
- Would they recommend the role of SF to other Year 3 students?
  Prompt: Why/why not?

c) Training
- What do they think of the training received for role of SPF?
  Prompt: How useful was it?
  If yes, in what way? If not, why not?
- Do they think they may benefit from the skills you learnt later?
  Prompt: In what way? If not, why not?

d) Use of Online Discussions
- Did they take part in the online discussions?
  Prompt: If not, why not?
- If yes - what was their experience of communicating/discussing within an online environment with their peers?
- Do they think the online discussions should continue after this period?
  Prompt: If yes why? If not, why not?

e) Improvements/Suggestions
- The introduction of using Student Peer Facilitators was an innovative system to introduce for the first time. In what way do they think the scheme could be improved?
  Prompt: What would benefit you more in your learning?

f) Other Comments
- Any other comments they would like to make in this interview related to the use of the Student Peer Facilitators or the asynchronous online discussions?

Thank student for participation. Reminders - all answers will remain confidential. Involvement in the study will have no bearing whatsoever on their development and progression on the MBChB programme.

May 2007

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STUDENT PARTICIPANT FOCUS GROUP STRUCTURE

Process:

- Distribute Participant Information Sheet & Consent Form
- Explain process of NGTs to group
- General discussion to gain overall impression of Student Peer Facilitation
- Ten minutes to note thoughts on at least two likes/dislikes and improvements made individually on small cards on three areas:
  (asterisk points felt to be most important)
  a. Student Peer Facilitation
  b. Online environment (WebCT) – experience and engagement of online discussions
  c. Tasks
     i. professional behaviours) can make a comment on tasks as a
     ii. safe prescribing) whole or on individual tasks
- Group then reviews and lists all points to see if any are duplicated
- Generic list is generated from within the group
- Group ranks each of above (eg 1-5) and collates on flip chart sheets.
- Points are allocated for ranking order of responses.
- Flip chart sheets are displayed around the room giving participants chance to clarify points raised.
- Key issues are identified
- Tape recording of focus groups
- Same process for all focus groups

Thank student for participation. Reminders - all answers will remain confidential. Involvement in the study will have no bearing whatsoever on their development or progression on the MBChB programme.

May 2007

EXAMPLE COLLATING GRID FOR STUDENT QUESTIONNAIRE DATA

Statements - Role of Facilitator											
Resp. No.	Hosp.	M/F	SPF/S	PG/ UG	1	2	3	4	5	Broad Category	Category Code
1	C	F	S	UG	4	4	3	4	5	Acceptance	ACCEP
2	C	F	S	UG	3	3	3	4	4	Expectations	EXPECT
3	C	F	S	UG	3	3	3	0	5		

Statements - Engagement and Participation in Group Discussions												
Resp. No	Hosp.	M/F	SPF/S	PG/ UG	6	7	8	9	10	11	Broad Category	Category Code
1	C	F	S	UG	3	4	3	4	4	4		
2	C	F	S	UG	4	2	2	4	4	4	Gender	GEN
3	C	F	S	UG	2	4	2	4	2	4		

Statements - Online Environment													
Resp. No.	Hosp.	M/F	SPF/S	PG/ UG	12	13	14	15	16	17	18	Broad Category	Category Code
1	C	F	S	UG	3	3	2	3	4	4	3		
2	C	F	S	UG	1	1	3	4	3	4	3		
3	C	F	S	UG	2	2	3	3	2	4	3	Challenges	CHALL

CODING STRUCTURE FOR DATA FROM STUDENT VOLUNTEER INTERVIEWS

Initial themes student participants generated concerning aspects of using Student Peer Facilitators for the asynchronous online group discussion activities. Themes were subsequently collapsed into three recurrent themes.

Broad Theme	Definition	Coding Category
Themes students perceived important for a Student Peer Facilitator		
Skills and attributes	This theme includes motivation, leadership and confidence of the Student Peer Facilitator, keeping the discussions going, helping to direct/support the group in their discussions, developing facilitation skills	SAA
Training	This theme involves perceptions of effective training and preparation for the role of a Student Peer Facilitator, feeling confident to perform the role, student requirements for training, what was lacking from training	TRA
Expectations and understanding	This theme includes meeting groups expectations, unable to fulfil the role of Student Peer Facilitator, unable to meet responsibilities	EXPUND

Broad Theme	Definition	Coding Category
Themes students perceived to be beneficial		
Communication and social aspects	This theme involves generating discussion and collaboration amongst the student groups, keeping in touch with other students	COMSOC
Discussing with peers	This theme involves communicating with peers/colleagues on the same level rather than a tutor or clinician, sharing clinical experiences, displaying openness, disclosure	DISC
Technology	This theme includes use of resources such as the Blackboard online platform and other Internet resources, the flexibility offered, access and time management of discussing online	TECH

Broad Theme	Definition	Coding Category
Themes students perceived to be challenging		
Contribution and Participation	This theme includes unequal contribution, no participation, others not working at the same level, not engaging in the group activity, lack of commitment, relying on others or the Student peer Facilitator to produce the work	CONPAR
Clarification of the Role	This theme involves status and acceptance, attitudes of students towards the role of a Student Peer Facilitator, remit of the role *(see expectations and understanding)*	CLAR
Online versus face-face environment	This theme includes the physical environment of the online discussions, communicating asynchronously and the lack of social cues available, the learning culture of medical students	OVFF
Learning styles	This theme involves the individual learning preferences and learning styles of students	LSTY
Peer-Peer Facilitation	This theme includes barriers Facilitators face in motivating peers to contribute to the discussions, being seen as an equal by others and role conflict., telling others what to do	PPF
Tutor Input	This theme involves reference to not having any tutor input into the discussions, discussions going round in circles and having no clinical or expert input into the discussions, lack of direction in the discussions	TUT

CODING CHART FOR DATA FROM STUDENT VOLUNTEER FOCUS GROUPS

Issue/Priority	Ranked Order for Teaching Hospital A	Ranked Order for Teaching Hospital B	Ranked Order for Teaching Hospital C	Ranked Order for Teaching Hospital D	Combined Ranked Order	Frequency Counts of Issues
Face-face Communication[1]	1	3	3	3	3	14
Role of Facilitator[2]	2	2	1	2	2	16
Motivation	3	1	2	1	1	18
Participation[3]	4	4	4	4	4	8
Reflection	5	5	5	5	5	4
Superfluous Work[1]						
Skills of Facilitator[2]						
Engagement[3]						
Tutor Presence		6	7	7		2
Purpose of Discussions	8					2
Opportunities to View Student's Opinions			8			2
False Tone of Discussions		8		8		2
Training	6	7	6	6		

[1, 2 and 3] Combined Themes

APPENDIX D: EXTRACTS FROM GROUP DISCUSSIONS AND EXAMPLES OF FACILITATOR LANGUAGE USED IN DISCUSSIONS

Extracts from a Sample Student Group Discussions

Agent describes the person posting the message as either SF = Student Facilitator or S = Student. Target describes who the message is aimed at i.e. GSF = Group and Student Facilitator. Messages are exactly as posted with no corrections made of grammar or spelling errors.

Group No: 57 Teaching Hospital = C Date: 2nd April 2007

Agent: SF	Target: GSF	Gender: Female

Message no. 485
Posted by (xxxxx) on Monday, January 15, 2007 8:18pm
Subject: professionalism from the GMC guidance for good doctors:
Probity means being honest and trustworthy, and acting with integrity: this is at the heart of medical professionalism. Apart from honesty what other areas do you think form an important part of medical professionalism? Do you think it entails acting responsibly at all times - even when not at work? Do you think you can be regarded as a professional if you come to work late in dirty jeans? Should there be a common health professional code with explicit standards?

Agent: S	Target: GSF	Gender: Male

Message no. 487[Branch from no. 485]
Posted by (xxxxx) on Tuesday, January 16, 2007 10:43am
Subject: Re: professionalism
I think a vital part of professionalism, implied in the word itself, is an ability to work well with the entire medical team: nurses, auxiliaries, cleaners, students etc. I've seen a few doctors completely disregard nurses, except to give them quite clipped orders at the end of rounds. If the team work well together, and hopefully this would infer that they get on well with each other, patient care is much more likely to be fluid & efficient; miscommunications are more likely to be spotted and queried in well-bonded teams.

Agent: S	Target: GSF	Gender: Male

Message no. 505[Branch from no. 485]
Posted by (xxxxx) on Wednesday, January 17, 2007 7:58pm
Subject: Re: professionalism
Re: a person turning up to work late with dirty jeans, on a regular basis made by X. Depending on the definition of what a 'professional' is, it could be argued that their behaviour is unprofessional but unless it compromises their job (e.g. patient care to a professional standard) then they are still a 'professional'. I suppose the real issue is if they can still carry out patient care to a professional standard if they're late and in dirty jeans.

Agent: S	Target: GSF	Gender: Male

Message no. 533[Branch from no. 505]
Posted by (xxxxx) on Sunday, January 21, 2007 9:16pm
Subject: Re: professionalism
I think the point X made raises the question of whether someone's professionalism is determined by their competence/ability carry out their job or by the way they carry out their job ie, with integrity, teamwork, etc. Is the term professionalism used in the later way (how someone goes about their work) merely a stereotype of how professionals' generally act and has now become expected. I would probably argue that in a Doctor's role today then the qualities we would include under the banner of 'professionalism' are essential for someone to be competent. For example with a multi-disciplinary approach doctors must be honest, reliable and a team player to competently interact with the healthcare team and make clinical decisions in the patients' interests.

Agent: S	Target: GSF	Gender: Female

Message no. 583[Branch from no. 505]
Posted by (xxxxx) on Tuesday, January 23, 2007 6:26pm
Subject: Re: professionalism
I agree that how you dress/how punctual you are don't necessarily compromise your ability as a doctor, but they are seen by members of the public as markers of our professional behaviour. A patient may be worried that a doctor who is tardy and unkempt is going to take the same slapdash approach to their treatment, which could affect their relationship with the doctor and therefore his/her ability to carry out the appropriate patient care

Agent: S	Target: GSF	Gender: Female

Message no. 612[Branch from no. 485]
Posted by (xxxxx) on Wednesday, January 24, 2007 1:09pm
Subject: Re: professionalism
On the point of acting professionally and responsibly out of work, it is a hard one. Trying to make rules on this is an impossible task, as no one can tell us how to behave when we are not at work. Of course we need to act responsibly in the case of patient confidentiality, that is a given. But making rules on things like getting a drunk in public bar cannot be made. I mean, we should all have the right to go out and relax, maybe with a few drinks, we may end up getting drunk, who knows. But doing this in front of patients, isn't exactly professional. The only way rules can be made on this is for us to make our own ie make sure we go out in bars that we know our patients own etc, but this is a very hard task! What do you guys think?

Agent: S	Target: GSF	Gender: Female

Message no. 918[Branch from no. 612]
Posted by (xxxxx) on Wednesday, January 31, 2007 9:10pm
Subject: Re: professionalism
I think that when in a public place, it is important to consider how our behaviour might influence a person's opinion of and trust in the medical profession if it is apparent that we are prospective doctors. As X says it is obviously essential to maintain patient confidentiality but maybe we could extend this to include being careful about what we say in public about other health care professionals and places we have worked in to avoid diminishing an onlooker's faith in the NHS.

Examples of Facilitator Language used by Non-Facilitators in Sample Student Group Discussions

Agent describes the person posting the message as either SF = Student Facilitator or S = Student. Target describes who the message is aimed at i.e. GSF = Group and Student Facilitator. Messages are exactly as posted with no corrections made of grammar or spelling errors.

Group No: 3 Teaching Hospital = A

Agent: S	Target: GSF	Gender: Male

Message no. 1737[Branch from no. 1660]
Posted by (xxxxx) on Thursday, March 1, 2007 5:56pm
Subject: Re: Relationships with patients

Hi everyone, I too have noticed how patients will speak openly and in long detail about their illnesses and current problems with us as medical students **and then as X mentioned**, decide not to tell the Dr in order not to "waste their time" or bother them too much. **A good point was made when X** said the importance of our role in passing this information on to the Dr in charge of the patient's care. I once spoke to a patient at my GP practice ready to present her history to the Dr, she gave her consent to speak with me and went on to explain that her husband was seriously ill and had been transferred to a hospital in another part of the country. I explained that I would be able to go in to the consultation with her and help to explain her situation if she liked. I think the fact that I could transfer this information to the GP and accompany her was a comfort. **How has everyone else** dealt with some of the situations come across when patients are looking for reassurance in your answers?

Group No: 21 Teaching Hospital = B

Agent: S	Target: GSF	Gender: Female

Message no. 455[Branch from no. 386]
Posted by (xxxxx) on Wednesday, December 12, 2007 9:33am
Subject: Re: Possible topic

I am **interested in the question raised by X** of what to do when you witness poor professional practice. Speaking from experience, poor practice is something you are likely to see on an alarmingly regular basis. It is easy to say that you should always take action when you witness something inappropriate, but realistically it is incredibly difficult to stick your head above the parapet (is that how you spell it??) to bring poor practice to someone's attention, particularly when a senior collegue is involved. I think this is particularly an issue when you are a medical student, and therefore seen as being at the "bottom of the pile". **On the other hand, as X said** if everyone continues to turn a blind eye to poor practice, things never improve. In the worst case scenario, something catastrophic happens as the result of poor practice, and you're left wondering "what if I'd done something about it?". **What does everyone else think??**

Group No: 36 Teaching Hospital = D

Agent: S	Target: GSF	Gender: Male

Message no. 739[Branch from no. 602]
Posted by (xxxxx) on Sunday, January 28, 2007 1:20pm
Subject: Re: Dating Ex-patients

I think our group has discussed some interesting points around the ethics of this issue. Having looked at some of the literature on the subject **and not wanting to repeat X**, I'm just going to say that aside from it being un-professional, the risks that this involves, especially in the future where the relationship may not last needs to be sized up. In an age of 'fitness to practice' boards and doctors being disciplined, we must question whether it will really be worth following our emotions. I think that despite the GMC looking at every case of misconduct individually, the argument for the relationship being unethical on the basis of transference, autonomy and consent will be an easier one to make, compared to the argument in the doctors defence. Interestingly a study done by Gartrell, 'Physician-patient sexual contact. Prevalence and problems', showed that students/doctors who weren't taught about non-professional relationships were more likely to partake in one in the future, so we're already benefiting from the hidden-curriculum! **Any thoughts guys??**

Group No: 48 Teaching Hospital = C

Agent: S	Target: GSF	Gender: Female

Message no. 531[Branch from no. 418]
Posted by (xxxxx) on Tuesday, December 18, 2007 10:29pm
Subject: Re: 1. What is the definition of professionalism & what is meant by it

Hi everyone,
I found **the web page that X** sent us very useful for this particular topic - so if you have not already done so, give it a quick read!! I think that at this stage in our career's, a very important aspect of professionalism is knowing when to speak out if told to do something that we are unfamilar with (ie something which may put yourself and/or the patient at risk). This may seem very obvious now as you read this comment, but on a busy ward round with a scary consultant, **as X said,** we all know, it may be very difficult to say no. I was just **wondering if anybody else** has every experienced this, and if so, how they felt and dealt with the situation?

APPENDIX E: EXAMPLE OF COMMUNITY OF INQUIRY CODING AND CODING FRAMEWORK DIMENSIONS USED FOR ANALYSIS OF FACILITATOR LANGUAGE

Example Coding Sheet used for Analysis of Discussions with COI model

Cognitive presence values: CTE=1; CE=2; CI=3; CR=4; no cognitive presence detected = 0

		CTE		CE		CI		CR	
Group No.	Message No.	Coder 1	Coder 2	Coder 1	Coder 2	Coder 1	Coder 2	Coder 1	Coder 2
51	273	1	1						
51	274	1			2				
51	286			2	2				
51	311						3	4	
51	287				2	3			

Social presence values: Numerical

		SEE		SOC		SGC	
Group No.	Message No.	Coder 1	Coder 2	Coder 1	Coder 2	Coder 1	Coder 2
51	273	1	1			2	2
51	274	4	4			2	2
51	286	1	1	1	1		
51	311			1	1	1	1
51	287	3	3			2	2

Tutor presence values: TIM=5; TDI=6; TBU=7; no teaching presence detected = 0

		TIM		TDI		TBU	
Group No.	Message No.	Coder 1	Coder 2	Coder 1	Coder 2	Coder 1	Coder 2
51	273	5	5	6	6		
51	274	5	5	6	6	7	7
51	286						
51	311					7	7
51	287					7	7

Group No: 51 **Teaching Hospital = C**

Agent: SF	Target: GSF	Gender: Female

Message no. 273
Posted by (xxxxx) on Monday, December 17, 2007 7:53pm
Subject: Accessing WebCT
Hi everyone
I think the best way to access WebCT is via the Portal (www.portal.manchester.ac.uk) - use your normal uni log on (ie mmm....) - there are 3 tabs labelled Home Page, My Studies and My Services, Under My Studies you can click straight onto WebCT or you can also click onto Year 3 Portfolio - this takes you to the WebCt Home Page which allows you to take part in a conversation but also given you access to Contents - which contains all of the important document for Portfolio (including instructions for the Professionalism exercise and for posting messages on Web CT).
Hope this helps! Have a good Christmas X

Elements	Categories	catCode	Instances
Cognitive presence in posting	Triggering event	**cte**	√
	Exploration	**ce**	
	Integration	**ci**	
	Resolution	**cr**	
Social presence in posting	Emotional expression	**see**	2
	Open communication	**soc**	
	Group cohesion	**sgc**	2
Teaching presence in posting	Instructional management	**tim**	√
	Direct instruction	**tdi**	√
	Building understanding	**tbu**	

Agent: SF	Target: GSF	Gender: Female

Message no. 274
Posted by (xxxxx) on Monday, December 17, 2007 8:11pm
Subject: Poor Professional Practice
Me again!
Hopefully you will get the chance to have a look at the requirements of the Professionalism Exercise over the next couple of weeks
To start our discussion off, I thought I would pick a couple of the questions on our list:
(a) If you saw an example of poor professional practice what would you do?
(b) If you were asked to engage in poor professional practice what would you do?
Well .... I'm sure the straightforward answer to both of these is (a) try to bring it to someone's attention and (b) refuse to do it But of course life isn't that simple is it? Although we are bound by the GMC guidelines not to cover up professional incompetence that we become aware of, it's hard to know how you would actually go about this in practice, especially at our stage when we are only students (in fact would we always be able to recognise such incompetence? I'm not sure I would)

Well .... I'm sure the straightforward answer to both of these is (a) try to bring it to someone's attention and (b) refuse to do it
But of course life isn't that simple is it? Although we are bound by the GMC guidelines not to cover up professional incompetence that we become aware of, it's hard to know how you would actually go about this in practice, especially at our stage when we are only students (in fact would we always be able to recognise such incompetence? I'm not sure I would)

I suppose if it's a PRHO, SHO or Reg doing something wrong then we could always talk to the Consultant. But what if it's a Consultant that's being unprofessional? And how is it likely to be received if we do speak up? I worked for a number of years in business and the subject of "whistleblowing" was a hot topic there as well. It's fine in theory but it's when you actually have to find someone to take your concerns to that it becomes a bit scary.

Maybe we should have access to a professional mentor that we could speak to in confidence about such things? Happily at this stage I haven't seen anything that could remotely be described as bad practice! What do you think?
X

Elements	Categories	catCode	Instances
Cognitive presence in posting	Triggering event	**cte**	
	Exploration	**ce**	√
	Integration	**ci**	
	Resolution	**cr**	
Social presence in posting	Emotional expression	**see**	4
	Open communication	**soc**	
	Group cohesion	**sgc**	2
Teaching presence in posting	Instructional management	**tim**	√
	Direct instruction	**tdi**	√
	Building understanding	**tbu**	

Agent: S	Target: GSF	Gender: Female

Message no. 286[Branch from no. 274]
Posted by (xxxxx) on Thursday, December 27, 2007 7:57am
Subject: Re: Poor Professional Practice

Hi X Its definitely an interesting subject that doesn't have an easy answer. If it was a PRHO, SHO or SPR then it's true you could talk to the consultant but depending on how your relationship with them was, maybe you could try to talk to them directly first? It's easier said than done but I think it would be what I might try to do. Then if the problem continued I would talk to the consultant.

Elements	Categories	catCode	Instances
Cognitive presence in posting	Triggering event	**cte**	
	Exploration	**ce**	√
	Integration	**ci**	
	Resolution	**cr**	
Social presence in posting	Emotional expression	**see**	1
	Open communication	**soc**	1
	Group cohesion	**sgc**	
Teaching presence in posting	Instructional management	**tim**	
	Direct instruction	**tdi**	
	Building understanding	**tbu**	

Agent: S	Target: GSF	Gender: Female

Message no. 311[Branch from no. 286]
Posted by (xxxxx) on Wednesday, January 2, 2008 5:00pm
Subject: Re: Poor Professional Practice

As previously mentioned, this problem is always going to be difficult to approach. I have to say that I agree with X, in that personally, I would always talk to the individual about their 'misconduct' face to face, initially. After all, sometimes things can be resolved by a simple conversation. If the person is relatively junior, this may be more easily done, as they may be willing to take your comments on board. Senior members of staff may be more difficult to approach, but that doesn't mean they won't listen to what you have to say. As with most difficult conversations in life, I think that the way you phrase what you have to say must be carefully considered, and tailored towards the individual.

However, I don't think it is ever beneficial to be too accusational. The person may be unaware that what they are doing is wrong/immoral, and may be embarrassed when reminded. This highlights the need for sensitivity and privacy when talking to your colleague about the issue. If the problem is something relatively common, arranging a meeting among colleagues regarding the subject may help, without any direct finger pointing. What do people think?

Elements	Categories	catCode	Instances
Cognitive presence in posting	Triggering event	**cte**	
	Exploration	**ce**	
	Integration	**ci**	√
	Resolution	**cr**	
Social presence in posting	Emotional expression	**see**	
	Open communication	**soc**	1
	Group cohesion	**sgc**	1
Teaching presence in posting	Instructional management	**tim**	
	Direct instruction	**tdi**	
	Building understanding	**tbu**	√

Agent: S	Target: GSF	Gender: Female

Message no. 287[Branch from no. 274]
Posted by (xxxxx) on Thursday, December 27, 2007 2:16pm
Subject: Re: Poor Professional Practice

Hi all;
On the face of it, it seems easy-whistle blow and refuse to do bad, bad things! I remember in a recent lecture, we all collectively grumbled at the simplicity of it....but let's be honest.....it's a tricky question....we're all on the bottom of the food chain that is the mighty medical training programme and the even mightier, even more scarily hierachical, NHS. During my IPE week (ironically) I saw a very very VERY senior person perform a breast exam
without a female chaperone. I was contemplating whether I should blow my whistle but I quickly realised that I was a woman as well as a student doctor (what a relief) so I guess it turned out to be fine....although what would I have done if this very very VERY senior person had conducted in some bad practice? What would I have done? Ultimately what I remind myself is that, the patient is at the centre of all what we do. After weighing things up, how will it affect them? We've all been a patient and I don't think we'd like to be at the receiving end of bad medical practice. I hope it's not naive of me to say this-do the right thing, even if it's the hardest thing you've ever done (how heroic). See you in a few days guys! X

Elements	Categories	catCode	Instances
Cognitive presence in posting	Triggering event	**cte**	
	Exploration	**ce**	√
	Integration	**ci**	
	Resolution	**cr**	
Social presence in posting	Emotional expression	**see**	3
	Open communication	**soc**	
	Group cohesion	**sgc**	2
Teaching presence in posting	Instructional management	**tim**	
	Direct instruction	**tdi**	
	Building understanding	**tbu**	√

CODING DIMENSIONS USED FOR ANALYSIS OF FACILITATOR LANGUAGE

1. Each anonymised entry is associated with a heading, which gives the following information:

a. Students identity

b. Date and time of entry

c. Whether the entry was made by a Student Peer Facilitator or other student

d. The gender of the student

e. The Teaching Hospital of the student

f. Group discussion number

2. Each entry is coded separately.

3. Codes A-D are used to describe the triggering events in the entry. Triggering events are prompts or questions to the group based loosely upon indicators described in Garrison & Anderson's Community of Inquiry Template (2001).

4. Codes 0 - 2 are used to describe the implications of behaviour in the entries. This is in regard to the nature of facilitation occurring with the group.

5. Codes M or F indicate the gender of the Student Facilitator.

6. Each entry is scored to quantify the quality of the entry made.

7. All codes are used if what they denote is present in the textual content of the entry and are only used once in an entry, despite the number of times they may be present in an entry.

APPENDIX F: LITERATURE REVIEW SEARCH STRATEGY

Database Searches

Multiple information resources were used to undertake the literature review, including searching several databases. Material was examined and those that were considered relevant were retrieved for inclusion in the review. A summary of the database searches performed during the process of the review is set out below.

MedLine

Number of results for the following search terms:

- Computer + assisted + instruction
  (combined with education/professional) - 1,946
- Asynchronous + discussion + forums - 4,300
- Web-based + learning - 1,233
- Online + discussion + forums - 5,592

Results were then filtered by author, publication type, journal and subject.

Web of Knowledge and Science

Number of results for the following search terms:

- Medicine + education – 1,163

Results were then refined within (medical training, medical curriculum and medical standards) - 27

- Medical + undergraduate + education (by title) - 930
- Medical + postgraduate + education - 794

Results were then filtered by author, publication type, journal and subject.

SCOPUS (Elsevier)

Number of results for the following search terms:

- professionalism + medicine - 2,205 (refined to 376)
- professionalism + medical education - 3,129
- professional + development + behaviour + attitude - 11,000

Results were then refined by article, title, abstract and keywords. They were then limited to the subject area ‘medicine’ and format ‘article’.

PubMed (NCBI)

Number of results for the following search terms:

- professional + identity + of + doctors - 416
- professional + competency + of + doctors - 712
- medical + students + in + professional + training - 365

Results were then filtered by ‘relevance’ and ‘article type’.

ASSIA (Applied Social Science Index and Abstracts)

Number of results for the following search terms:

- Asynchronous + online + discussion - 38
- Computer mediated + communication - 175

Results were then sorted by relevance.

PsycINFO (Ovid Online)

Number of results for the following search terms:

- Online + peer + facilitation – 8,700
- Peer + peer + online + collaboration - 872
- Student + mentoring + techniques – 1,321
- Online + tutor + support - 572

Results were then refined by article, title, abstract and keywords. They were then limited to the subject area ‘medicine’ and format ‘article’.

ERIC (ProQuest)

Number of results for the following search terms:

- Online + computer conferencing - 179
- Online + communities of inquiry - 249
- Assessing + online + discussion + forums - 4

Results were sorted or expanded upon where relevant.